

THE AUSTRALIAN ZOOLOGIST

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Part I.

NEW SHARKS AND FISHES FROM WESTERN AUSTRALIA.

PART 2.

By GILBERT P. WHITLEY, F.R.Z.S.

(Plate i. and text-figs. 1 to 15.)

Since my paper on "New Sharks and Fishes from Western Australia" was published in the "Australian Zoologist" in May, 1944, and some fishes were illustrated in the "Proceedings" in August, I have spent a further period working in the field in Western Australia and have been fortunate enough to obtain specimens of several species of sharks hitherto known only from incomplete specimens or from photographs. I am now able to describe and figure these species in fuller detail and give some data on their food and breeding. Some new or little known fishes are also described or figured for the first time, often from living or fresh examples. Two new families, one Berycoid and the other proposed for an interesting blind gudgeon, and more than 20 new genera, species, etc., are named.

Mr. L. Glauert, Director of the Western Australian Museum, kindly afforded me facilities for working on the fish collections in Perth, enabling the preparation of a manuscript list of the fishes of the State, including many new records. Miss M. Johnston and Miss B. Carter, of the State Fisheries Department, Perth, typed the paper for publication.

Family GALEIDAE.

GALEOLAMNA GREYI, Owen.

(Fig. 1.)

The typical species of the genus *Galeolamna* are whaler sharks with the head 4 to 4.8 in total length, nostrils nearer mouth than end of snout, teeth notched and serrated, preoral length notably less than width of mouth, and *lacking an interdorsal ridge*; the middle of the vent is usually in the posterior half of the shark. The Western Australian forms of this group may be subdivided as follows into geographical subspecies:

- A. Fifteen or sixteen teeth on either side of the symphysial tooth in each jaw. *G. greyi greyi*, Owen (South Australia to Bunbury).
- AA. Twelve to fourteen teeth on either side of the symphysial one in each jaw.
 - B. Snout bluntly rounded.

Anal origin and end of its base behind levels of those of second dorsal. Pectoral angle under first dorsal fin. Dermal denticles

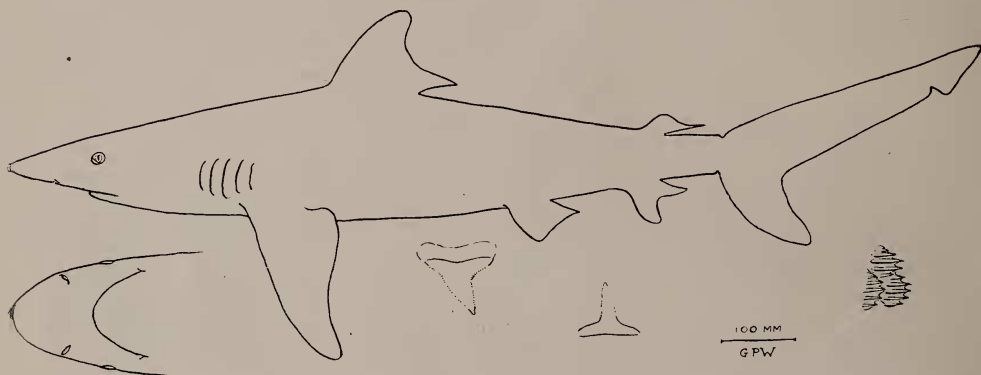
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with three keels. . . . *G. greyi mckaili*, subsp. nov.* (Swan River district).

BB. Snout more acutely rounded.

Anal origin and end of its base before levels of those of second dorsal. Pectoral angle well in advance of level of first dorsal. Denticles with five keels. *G. greyi cauta*, subsp. nov. (Shark's Bay to Point Cloates).

Figured herewith (Fig. 1) is a typical *G. greyi greyi* from Esperance, a female, 1,301 mm. long and weighing 27 lb.



1. Whaler Shark, *Galeolamna greyi greyi*, Owen. A female from Esperance. Also teeth and dermal denticles.

GALEOLAMNA GREYI CAUTA, subsp. nov.

(Fig. 2.)

A female whaler shark, 918 mm. long, netted in Herald Bight, Shark's Bay, Western Australia, on 5th August, 1943, agrees fairly well with my description (Fish Austr., i., 1940, p. 273, fig. 303) of a male Swan River whaler, 806 mm. long, but presents some noteworthy variations.

The female has head 4.4 in total length, snout rather more acute, predorsal gibbosity less marked, the shallow convex interorbital comparatively narrower, and preoral length (59 mm.) much less than width of mouth (78). Dental formula:—

14.1.13 28

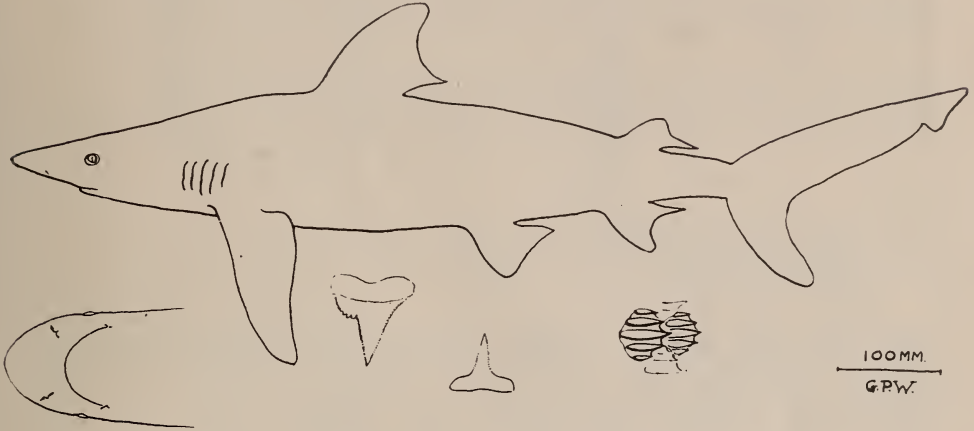
— = —. Teeth of both jaws serrated, that on each side of

12.1.13 26.

symphyseal tooth smaller than its outer neighbours (the teeth are fewer than in the holotype of *G. greyi* in which there are 15 or 16 on each side

* Holotype of this new subspecies was described and figured in my "Fishes of Australia," i., 1940, p. 273, fig. 303 (not fig. 88, No. 5). It is now named in honour of the late Henry Lancelot Martin McKail, who was keenly interested in its identity and who informed me that it was known as the Bluenose on the Swan River because of a dark blue mark on the snout.

of each jaw. Those of upper jaw are slenderer than those of Owen's type. In *Galeolamna eblis* the dental formula is usually 14.1.14 in each jaw, but that species has an incomplete interdorsal ridge).



2. Nervous Shark, *Galeolamna greyi cauta*, Whitley. Holotype of subspecies from Herald Bight, Shark's Bay. Also teeth and dermal denticles.

The third gill-slit is longest; last two gill-slits over pectoral. Dermal denticles with five keels reaching the edge, which is slightly scalloped. Nostrils acutely lobed, lobes nearly 8 mm. long.

Anal origin and end of its base in advance of level of those of second dorsal instead of behind as in Swan River male. Pectoral fin shorter and its angle well in advance of level of first dorsal. Ventral base mostly in anterior half of shark.

No interdorsal ridge. Lateral line inconspicuous. Caudal pit above and below.

*Measurements in millimetres.**

H.1	169	F.1	135
2	206	2	88
3	73	3	43.5
4	97	4	209
5	209	5	53
6	440	6	44
7	17.5	7	38
8	12	8	76
9	98	9	59
10	—	10	47
11	15	11	35
12	51	12	72

* For explanation of symbols, see Proc. Linn. Soc. N.S. Wales, lxxviii., 1943, p. 114.

13	59	13	vide descr.
14	78	14	155
15	4	15	52
16	notch	16	257
17	26	17	64
18	17	18	51
B.1	680	19	37
2	470	20	124
3	293	21	238
4	135	22	117
5	118		
6	34		
7	32		
Eye to first gill-opening ..	88		
Snout from nostrils	42		
Nostril to mouth	34		

Colour: Dark grey above, white below. A few white round spots on right side behind pectoral. A dark bar along sides. Anterior margins of dorsals and caudal dusky. Caudal margin and tip of lower lobe blackish. Pectoral and ventral dusky superiorly; anal dusky anteriorly. Eye pale olivaceous and greyish, with pale grey ring. Dorsal and other fin axils white.

Vertebrae 160. No. 25 below first dorsal origin, 66 below second dorsal origin, 90 to the upward tilt of caudal axis and 70 more along the caudal fin to No. 160.

Liver weight 2 lb. Mesovarium and shell glands small, uteri thin and undeveloped, thus quite immature. The stomach contained some very digested fish remains, probably whiting (*Sillago*).

Described from an immature female specimen, slightly more than three feet long and 11 lb. in weight. Many specimens were swimming about at the time, but though my companions and I tried to wade near them, we were unable to get close and only managed to net one of the school.

This is the "Nervous Shark" of my "Fishes of Australia" (i., 1940, p. 105), but it has serrated teeth quite unlike the entire teeth shown in my fig. 103, which is referable to another species, *Mystidens innominatus* Whitley, 1944.

I noted more than 40 further specimens of *G. greyi cauta* from Shark's Bay in August and September, 1944. This shark breeds at less than four feet in length, embryos being about a foot long, each weighing about 4 ounces, compared with the 12 lb. approximate weight of mother.

In *G. greyi greyi*, breeding does not take place until a greater length, a female specimen 1,301 mm. long and 27 lb. in weight from Esperance, W.A., being immature.

The food of *G. greyi cauta* in Shark's Bay consists of various kinds of fishes, *Saurida*, *Sillago*, and *Dasson*, and a crab (*Lupa*) having been identified in the stomachs; they also took baits of Tailor (*Pomatomus*).

GALEOLAMNA DORSALIS, Whitley.

(Fig. 3.)

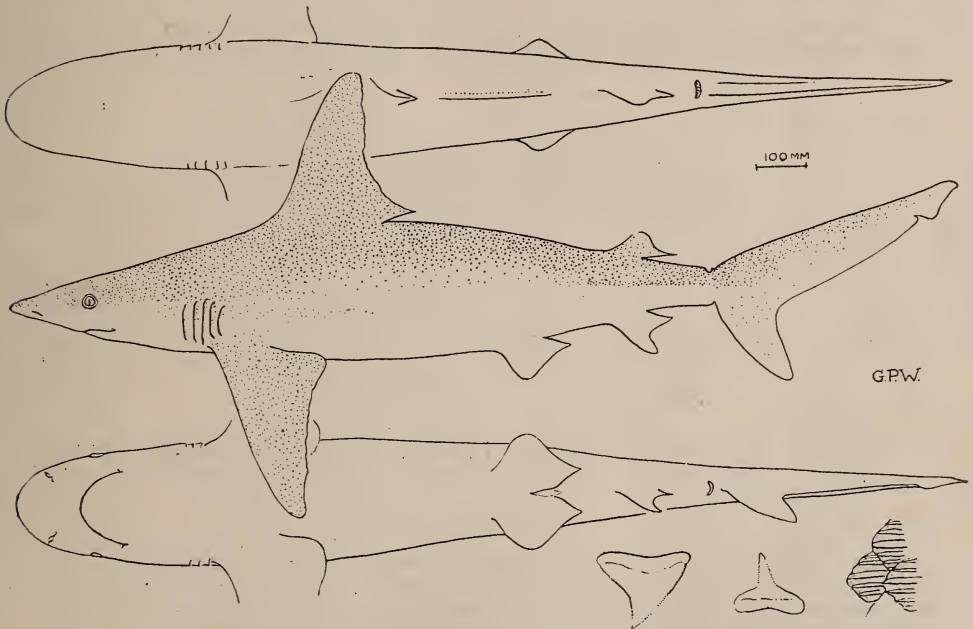
Galeolamna dorsalis Whitley, Austr. Zool., x., 3, May 10, 1944, p. 256, fig. 3, Carnarvon, W.A.

This species, hitherto known only from photographs and notes, was encountered in Shark's Bay, in August and September, 1944. Altogether 28 specimens, 5 ft. 5 in. to 6 ft. 7 in. long were caught. Some of the females were gravid, the embryos being in separate compartments, others had evidently bred. From five to ten embryos constitute a brood, each between $15\frac{1}{4}$ and $17\frac{1}{4}$ in. (388 to 438 mm.) long. I saw one female caught off Bunbury, the southernmost limit.

A female specimen, 1,890 mm. long and weighing 100 lb., from Dirk Hartog Island, is here figured. Its ovaries extended most of the length of the coelome, no ova were visible and the uteri were flaccid, so it had perhaps bred some time previously.

General colour pale grey above and parchment white below; iris pale bronze.

The presence of an interdorsal ridge which becomes obsolete before reaching either dorsal fin (as in *G. eblis* Whitley, to which this species is



3. Sand Shark, *Galeolamna dorsalis*, Whitley. Female from Dirk Hartog Island. Dorsal, lateral and ventral views; teeth and dermal denticles.

most closely allied) is noteworthy, but *dorsalis* is always separable from *eblis* by its higher dorsal fin. In *dorsalis* the distance from the origin of the first dorsal fin to its tip goes about 5 to $5\frac{1}{2}$ times in total length, but in *eblis* it goes 8 to 9 times in the same. The head of *dorsalis* is generally about $4\frac{1}{2}$ to $5\frac{1}{2}$ in total length, rarely 4 or less, as in *eblis*. In *dorsalis* the pectoral fins are very long, the second dorsal fin is larger and pectoral angle further back than in *eblis*. It seems likely that *eblis* breeds at a much larger size and has much larger embryos, but I have incomplete data on

this score. Females 7 to 9 ft. long at Bunbury (January, 1945) were immature.

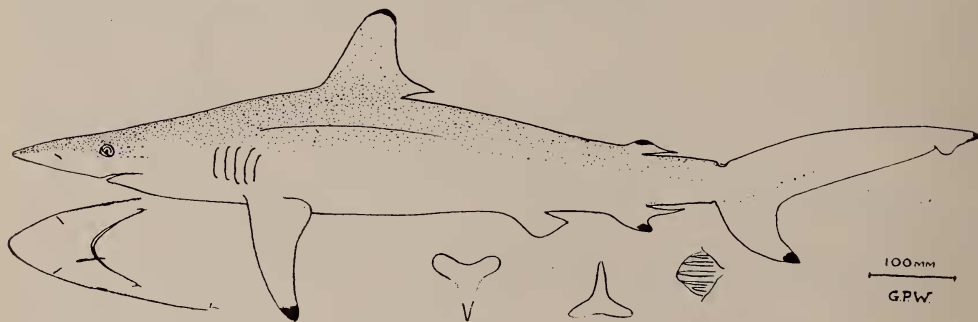
Galeolamna dorsalis feeds on various fishes and crustacea, but digestion is so rapid that identification of stomach contents is usually impossible and many specimens are empty. Apart from prawns, crabs, octopus and pipe-fish remains, I found the following fishes in this shark: *Cybius queenslandicum*, *Amphacanthus nebulosus*, *Parapercis*, *Amphitherapon*, *Sillago*, a Clupeid, probably *Sardinops*, and a small elasmobranch. Fish-baits taken were *Himantura*, *Mugil*, *Chrysophrys* and *Pomatomus*.

LONGMANIA CALAMARIA, Whitley.

(Fig. 4.)

Longmania calamaria Whitley, Austr. Zool., x., 3, May 10, 1944, p. 257, fig. 4. Busselton, W.A.

This species, hitherto known only from the incomplete type specimen, was encountered in Shark's Bay in August, 1944, when two males and five



4. Inkytail, *Longmania calamaria*, Whitley. Female from Dirk Hartog Island. Also ventral surface of head, upper and lower tooth, and dermal denticle.

females, 1,000 to 1,255 mm. long, and all immature, were examined. It is now possible to illustrate the whole shark, the accompanying figure showing an immature female, 1,120 mm. (3 ft. 9 in.) long and weighing 6 lb. 2 oz., from Dirk Hartog Island. The long snout, black-tipped fins, small second dorsal fin, and more than fifteen teeth on each side of each jaw are characteristic. The teeth are serrated in upper, entire in lower jaw.

16.2.16

Dental formula $\frac{16.2.16}{16.15.?$. The pectoral angle in some extends to below the

very anterior part of first dorsal fin.

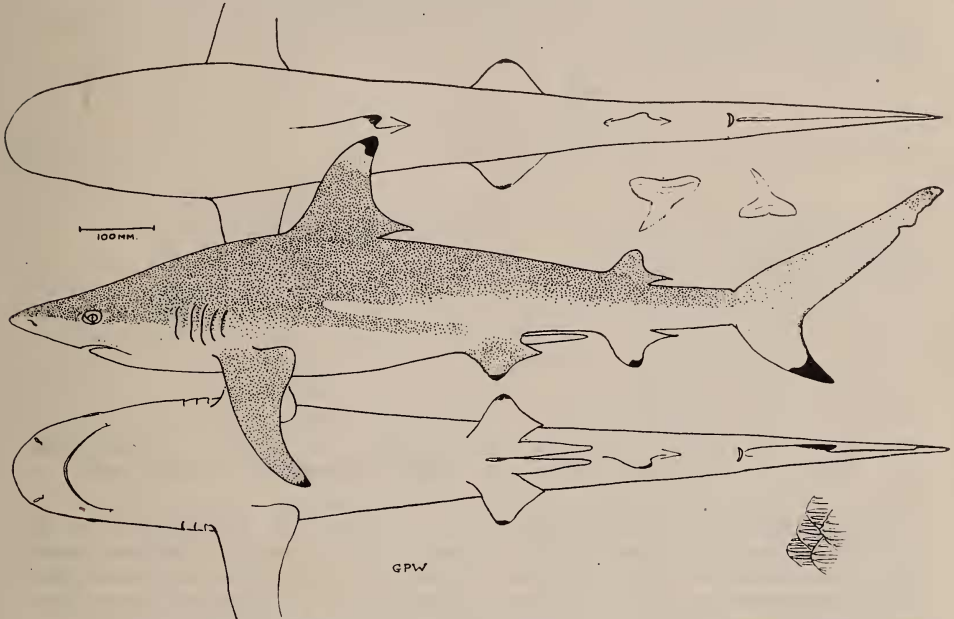
Stomachs contained a variety of fishes such as whiting (*Sillago*), pilchards (*Sardinops*), herring (*Escualosa*), marbled flathead, small stingray, tailor (bait), etc.

This species occurred at Bunbury in November, 1943, and January, 1945.

Genus *MAPOLAMIA* Whitley, 1934.
MAPOLAMIA SPALLANZANI (Le Sueur).
 Black Tip Shark.
 (Figs. 5 and 5a.)

Squalus spallanzani Le Sueur, Journ. Acad. Nat. Sci. Philad., ii., November, 1822, p. 351. Terre de Witt, New Holland.

The Black Tip Shark is not likely to be confused with more than one or two other species of Western Australian sharks. The brownish colour, black tips to most fins, blunt snout, lack of interdorsal ridge, rather large second dorsal fin, and the thirty or less serrated and notched teeth across each jaw are characteristic. In the Inkytail Shark (*Longmania calamaria*),



5. Black Tip Shark, *Mapolamia spallanzani* (Le Sueur). Male from near Yardie Creek, North-west Cape.

the snout is longer and more pointed, the second dorsal fin is small and low and there are more than thirty teeth across each jaw, these being either minutely or not at all serrated. Some of the Whaler Sharks (*Galeolamna* spp.) occasionally have dark or dusky tips to their fins, but can be distinguished by a combination of other characters such as the presence or absence of an interdorsal ridge, sharpness or roundness of snout, number and form of teeth, relative positions of second dorsal and anal fins, extent to which pectoral angle reaches below first dorsal fin, etc. Compare these features in the accompanying figures.

Description of Male.

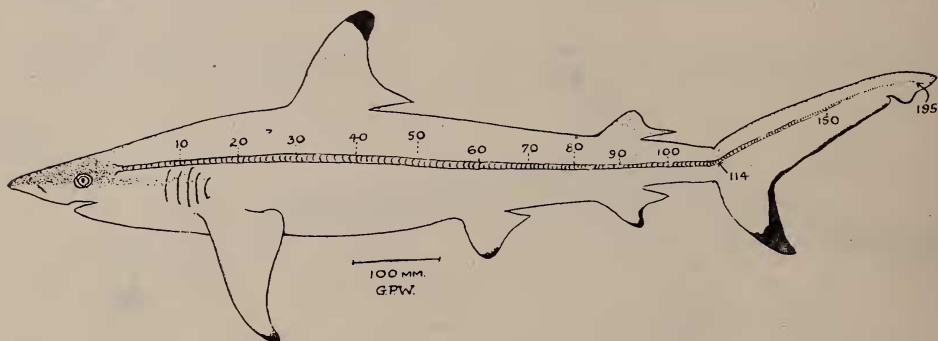
Predorsal profile not gibbous. Eyes large, ovate with nictitating membrane; pupil lenticular. Interorbital broad, weakly convex. Pupil of eye on

level with anterior part of mouth. Snout bluntly rounded. Head 4.3 in total length. Preoral length much less than width of mouth. No spiracle.

Teeth of upper jaw with their points deflected outwards, their inner margins oblique and scarcely notched, their outer margins deeply notched. They are serrated on shoulders and fangs, the serrae being largest on the outer shoulders. Teeth of lower jaw notched on both sides, with more erect fangs, minutely serrate. Bases of teeth usually wider than the teeth are high.

$$\text{Dental formula: } \frac{10? + 2? + 12}{11.1.1.12} = \frac{24?}{25}$$

Last two gill-slits over pectoral fin. Nostrils nearer mouth than end of snout, their lobes rounded, 5 mm. long. Labial folds short. Endolymphatic openings inconspicuous.



5a. Black Tip Shark, *Mapolamia spallanzani* (Le Sueur). Female from Winderabanda, North-west Cape, showing disposition of vertebrae.

Body rather deep, widest anteriorly. Lateral line inconspicuous. No interdorsal ridge. No keel on the caudal peduncle, which is rather broad. A lunate caudal pit above and below. Hide thick and tough. Shagreen with denticles imbricate, each with its free margin barely reached by its five transverse carinae.

Claspers well developed.

Measurements: Following the symbols devised in my scheme of biometric measurements, published in Proc. Linn. Soc., N.S. Wales, lxviii., 1943, pp. 114-115, the dimensions in millimetres are as follows:—

H.1	229	B.1	980	F.7	41
2	290	2	c.650	8	98
3	102	3	400	9	67
4	129	4	200	10	67
5	290	5	c.150	11	42
6	628	6	49	12	101
7	25	7	46	13	(vide fig.)
8	14	8	100	14	220
9	134	9	124	15	72
10 (no spiracle)		F.1	168	16	355
11	18	2	119	17	79

12	72	3	59	18	89
13	69	4	310	19	35
14	114	5	62	20	198
15	4.5	6	58	21	290
16	2.5			22	150
17	43				
18	39				

Additional measurements are:—

Total length: 1,265 mm. or about 4 ft. 3 in.

Distances between gill-openings: 23, 15, 13 and 13 mm.

Deepest (third) gill-opening: 57.

Eye to first gill-opening: c. 124.

Snout to level of angles of mouth: 129.

Ramal length: 85.

Tip of snout to outer angle of nostril: 56.

Inner angle of nostril to mouth: 42.

Origin of first dorsal to that of pectoral, 206; to that of ventral: 288.

Depth above ventral origin: 145.

Depth above ventral end: 104.

Fins: First dorsal with anterior margin not very strongly curved. Second dorsal rather large for a Galeid shark. Anal larger than second dorsal, its origin in advance of level of that of second dorsal, but their bases end level. Pectorals long and well curved, the last ray (= pectoral angle) below anterior part of first dorsal fin. Ventrals rather large, at middle of shark. Subcaudal notch high and small. Anterior margins of all fins trenchant, not flattened. Lower caudal lobe pointed. Upper caudal lobe equals head in length.

Colour: In life brownish with bronze to olivaceous tones, greyer along back and on a band extending downwards and backwards along sides from below first dorsal fin to above ventrals. The junction of the dark upper colours with the lighter dull yellowish of the flanks is mostly below level of eye, though interrupted below the eye itself. Eye grey to brownish; pupil black with a white outer ring. Dorsal axils grey. Conspicuous black tips to first dorsal, pectoral, ventral and anal fins and to lower caudal lobe. Anterior edges of dorsal and caudal fins dark brown. A lighter tone below the black tip to first dorsal. Upper surfaces of ventrals and pectorals greyish. Second dorsal fin and upper caudal lobe infuscated. Ventral surfaces and claspers white.

Vertebrae 193, the backbone being straight as far as tail, without lateral curvature, or any notably enlarged thoracic vertebrae. Vertebra number 30 was below origin of first dorsal fin, No. 57 over ventral origin, 86 over anal origin, 87 under second dorsal origin, 95 between ends of bases of second dorsal and anal fins, 113 to base of caudal. Last vertebrae very small.

Liver dark and in good condition. Testes length of coelome, the right one swollen anteriorly; vesiculae seminales stored with sperm. Stomach contained few minute fragments of some indeterminable fish.

Described and figured from a mature male specimen, 1,265 mm. or about 4 ft. 3 in. long, which I speared in shallow water in the sea near Yardie Creek, North-west Cape, Western Australia, on 8th October, 1944.

Description of Female.

In all general respects, similar to male, but with the following noteworthy features: Head 4.7 in total length.

Widest part of head near first gill-opening. Tongue smooth and rounded, not notched.

$$\text{Dental formula: } \frac{12.2.12}{11.1.11} = \frac{26}{23}.$$

Tooth on each side of symphysial one in lower jaw much smaller, in upper rather smaller than the outer neighbouring teeth.

Abdominal pores large. Pit-organs conspicuous. Pectoral fin comparatively shorter ($15\frac{1}{2}\%$ of total length in female, 17 in male).

Origin of first dorsal fin to that of pectoral, 160 mm.; to ventral, 240. Pectoral axil to origin of ventral, 265; distance between pectoral origins, 123.

Distance between gill-openings: 15, 11, 11, and 11. Longest (third) gill-opening, 44. Eye to first gill-opening, 102. Snout to level of corner of mouth, 107. Ramal length, 69. Snout to nostril, 45; nostril to mouth, 36.

Biometric measurements of female:—

H. 1 =	186	F. 1 =	142
2 =	228	2 =	98
3 =	80	3 =	52
4 =	106	4 =	268
5 =	232	5 =	54
6 =	520	6 =	47
7 =	21	7 =	41
8 =	13	8 =	88
9 =	109	9 =	60
10 =	—	10 =	53
11 =	15	11 =	31 (tip damaged?)
12 =	57	12 =	86
13 =	62	13 =	(as in male)
14 =	90	14 =	170
15 =	6	15 =	55
16 =	2	16 =	310
17 =	37	17 =	65
18 =	28	18 =	58
B. 1 =	820	19 =	35
2 =	560	20 =	150
3 =	330	21 =	270
4 =	142	22 =	124
5 =	130		
6 =	40		
7 =	39		

Colour as in male described above, but with the dark overtone level just below the eye whose pupil is darker grey; tips of ventrals and all the posterior margin of caudal fin black; second dorsal with dark-edged (not black) tip; nictitating membrane bluish-white.

Liver weight 12 oz., about 5% of total weight. Mesovarium pale, almost as long as coelome; uteri mere shreds, shellglands very small. No embryos or ova evident. Stomach contained a bitten cuttlefish, or squid head.

Vertebrae 195. No. 30 below first dorsal origin, 58 over ventral origin, 84 over anal origin, 86 under second dorsal origin, 95 between ends of second dorsal and anal bases, 114 at base of caudal, and 172 over upper caudal notch (see fig. 5a).

Described from an immature female, 1,090 mm. or 3 ft. 7½ in. long; weight 14½ lb., caught by handline (mullet bait).

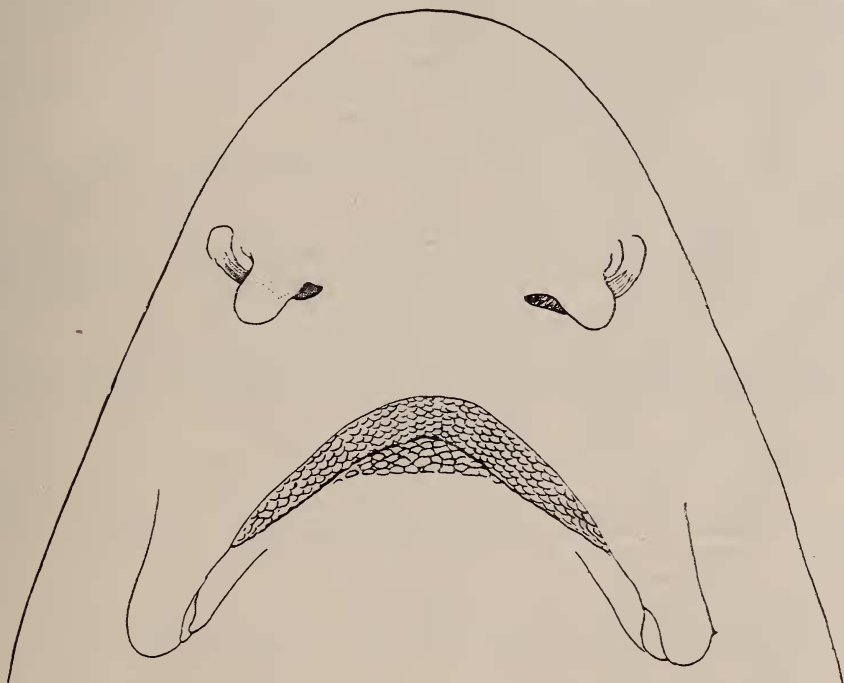
Locality.—Winderabanda Beach, eleven miles north of Point Cloates, Western Australia; 12th October, 1944.

Family EMISSOLIDAE.

EMISSOLA GANEARUM, *sp. nov.*

(Fig. 6.)

The giant size of Western Australian gummy sharks at once strikes an observer accustomed to the gummies of the eastern States. Thus, in New



6. Gummy, *Emissola ganearum*, Whitley. Ventral surface of head of holotype, off Bald Head, Albany. G.P.W. del.

South Wales, hundreds of specimens caught in various months by the trawlers, did not exceed 900 mm. in total length for males and 1,250 for females. Males usually measured between 750 and 800 mm., and females between 850 and 900. In New South Wales, the males out-numbered females by about 73 per cent.

In Western Australia, between June, 1943, and February, 1944, I saw numerous specimens caught around Esperance, Albany and Bunbury by set-lines. In these, the largest male was about 1,270 mm. long, and the largest female 1,570. Males usually measure less than 1,150 mm., and females between 1,250 and 1,350. In Western Australia, adult females outnumber males by about 13 per cent. in the commercial catches. In litters of embryos, however, males sometimes outnumber females (cf. Haacke, Zool. Garten, xxvi., 8, August, 1885, p. 247, on this ratio). When tagging sharks in southern Tasmania, however, I found 87.5% of this genus were males.

These striking numerical discrepancies suggest at least a racial differentiation for the W.A. stocks, but there are other differences as well, the most important being the absence of partitions separating the embryos in the uterus, so that a new specific name is necessary.

The size, colour, and numbers of embryos vary, too. In the gummies of New South Wales, 3 to 7 embryos are the usual brood. In the Western Australian sharks, there may be almost any number from 4 to 22, but there are rarely fewer than twelve; both the developing ova and the embryos are larger in the Western sharks, being full-term at from about 9 to 13 inches in length. The embryos vary in size at the same time of year in different mothers and are sometimes accompanied by a few infertile eggs. The embryos are usually plain greyish, without the transverse dark bars characteristic of Eastern Australian specimens.

About 75 to 80 teeth across each jaw, all blunt, those of lower jaw with some ridge-like crowns. Upper labial fold the longer. Third gill-slit longest. Spiracles fairly large in young, small and slit-like in adults.

Pectoral fin further forward than in *E. maugeana* Whitley, from Bass Strait, its angle below anterior portion of first dorsal fin. Lower caudal lobe rounded. Upper caudal lobe less than head in length. General colour greyish with white spots on back and along lateral line. Young examples sometimes with dark edge to dorsal. Iris bronze to greyish.

Feeds on various crustacea (spider, sand, hermit and swimming crabs, shrimps, king prawn, raninoid), sea mouse, sipunculid worms, octopus, squid, sharks' and skates' eggs, and fishes (*Phyllopteryx*, *Parapercis*, catfish, parrot fish, yelloweye mullet, etc.).

The liver weight varies from 4 to 10% of the whole weight.

Localities.—Holotype from off Bald Head, Albany, W.A.; 5 October, 1943. Female, 1,400 mm. in total length (head figured here). Weight over 40 lb. Had 22 embryos, mostly (15) female, 300 to 362 mm. long; umbilical scar present, no yolk-sac.

Doubtful Island Bay, east of Albany, W.A.; 30/11/11, F.I.V. "Endeavour" (Austr. Mus., No. E.2316). Female 283 mm., with umbilical scar healed.

Albany, W.A. (Austr. Mus., No. IA.672). Female, 335 mm. long, with umbilical scar healed.

Many specimens seen from off Bunbury, Albany, and Esperance, Western Australia, and in the Perth fish markets.

Cynias lenticularis (Phillipps), the white-spotted Gummy of New Zealand, differs from those of Western Australia in having larger spots and more acute snout; the nostril flaps have the posterior margin longer than the lateral instead of being semicircular as in the Western Australian form, and the spiracles are smaller than in *ganearum* of comparable size.

Family ECHELIDAE.

MURAENICHTHYS BREVICEPS, Gunther.

Depth (15) 3.2 in head (49) which is 11.4 in total length (560) and 3.4 in space between gill-opening and vent (169). Eye (6) 1.6 in snout (10) and 8.1 in head, less than interorbital (6.5). Cleft of mouth (17) 2.8 in head. Gill-openings (3) 2 in eye, and 15 mm. apart ventrally. No fringes on lips. Teeth biserial along vomer and in narrow strips about 2 rows wide along jaws.

Cannot see jujostegalia through integument.

Snout to vent (215) 1.6 in tail (345). Predorsal length (98) much less than distance from dorsal origin to end of tail (462). Origin of dorsal to level of vent (117) much more than head. Anal fin commencing just behind vent, confluent with caudal and dorsal, the latter extending well in advance of level of vent.

Dark greyish brown above, whitish below. The junction rather strongly marked below middle of sides, along lower level of gill-slits and lower level of eye. Some yellow on cheeks, throat and chin. Most of mouth white, tips of jaws dark greyish brown. Eye dull bluish. Dorsal fin dirty greyish with a yellowish tinge anteriorly, but this gives way posteriorly to a brighter yellow. Anal dull whitish with some yellow posteriorly. Caudal brown.

Described from a specimen 560 mm. or 22 inches long.

Locality.—Albany, Western Australia. March, 1944. W.A. Mus., Regd. No. P.2604.

This species of Worm Eel, originally described from Tasmania, is known also from Victoria and South Australia. This is the first time it has been recognised from Western Australia.

It can be readily distinguished from *Scolecenchelys* by having the dorsal fin originating well in advance of the vent, cleft of mouth about one-third of head, teeth in more than one series along jaws and vomer, predorsal length much less than rest of fish, and distance from origin of dorsal fin to level of vent much more than length of head.

The species is well illustrated in Waite's "Fishes of South Australia," 1923, p. 73.

Family BELONIDAE.

Genus DJULONGIUS Whitley, 1935.

DJULONGIUS GAVIALOIDES (Castelnau).

(Fig. 7.)

Belone gavialoides Castelnau, Proc. Zool. Acclim. Soc. Vict., ii., May 10, 1873, p. 142. Fremantle, W.A.

Belone groeneri Klunzinger, Sitzb. Akad. Wiss. Wien., lxxx., 1, 1879, p. 414. Port Darwin, Northern Territory. (New Synonym.)

Br. 13; D.i., 20; A.i., 20; P.i., 13; V.i., 5; C.13 branched.

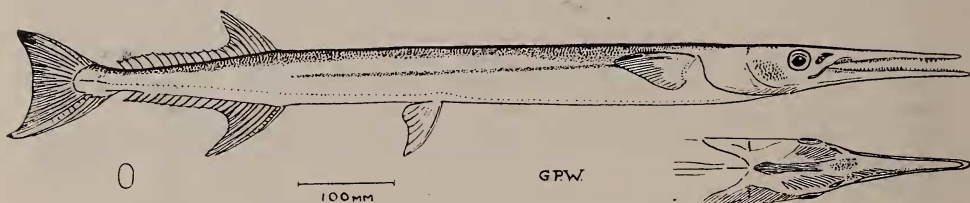
Head, from end of lower jaw, 273 mm.; from upper, 265. Eye, 25; interorbital, 46. Dorsal base, 162; its lobe, 71. Anal base, 156; its lobe, 86. Last dorsal ray, 11; last anal ray, 13. Predorsal length, 714. Snout to origin of ventral, 542. Pectoral, 85; its base, 28. Pectoral origin to ventral origin, 265. Ventral fin, 63. Ventral origin to anal origin, 163. Middle caudal

rays, 43. Depth of body anteriorly, 62; at ventrals, 55. Depth of caudal peduncle, 22; width of same, 18.

Upper jaw included. Teeth juxtaposed, about vertical, or sloping slightly backwards. Palate toothless. Tongue rough. Maxillary mostly concealed under preorbital. Middle of interorbital concavely excavated. No gill-rakers. Scales in numerous rows on cheeks, none on operculum. Body not greatly compressed. No keel on caudal peduncle, which is deeper than broad.

Anal origin in advance of that of dorsal. The anal lobe is higher than that of the dorsal, but its posterior rays are rather lower than the dorsal ones; second anal ray longest; second pectoral ray longest.

Colours (in life): Light sea-green above (three faint blue lines along top of back), gradating to silvery white below. A dark bluish-green band



7. Long Tom, *Djulongius gavialoides* (Castelnau). Female from Dirk Hartog Island. Also transverse section through caudal peduncle and dorsal view of head.

extends back from upper portion of operculum and pectoral base along middle of side to between dorsal and anal origins. Mouth white, with silver, blue and pink tinges; teeth white. Tips of jaws fleshy or pinkish. Pupil black; iris very pale yellowish with green above. Cheeks and chin silver. Fins very pale green or almost white. Slight dark grey margins to dorsal and caudal lobes. Pectoral watery yellowish, with dark smoky grey upper margin and distal third. A smoky blotch at upper part of inner pectoral axil.

Described and figured from a female specimen, 1,000 mm. long and weighing 3½ lb. The stomach was very large, empty. Ovaries well-developed with discrete ova and blood vessels; gonad weight, 1 oz. Swim-bladder carrot-shaped with scalloped edges. The described specimen was the largest of several, 960 to 1,000 mm. long; weight, 3 lb. to 3 lb. 13 oz.

Locality.—East coast of Dirk Hartog Island, Western Australia. Seined, 17th August, 1944. Coll. G. P. Whitley.

A small example was secured at Point Cloates on 30th September, 1944. Total length, 590 mm.; caudal peduncle with a slight keel on each side; D.i., 20; A.i., 20. Regd. No. P.2798.

Family MUGILIDAE.

MOOLGARDA, *gen. nov.*

Orthotype, *Moolgarda pura*, *sp. nov.*

Mulletts with the adipose eyelids obsolescent, not nearly covering one-third of eye posteriorly. Snout longer than eye. Interorbital convex.

Mandibular angle very obtuse. Upper jaw terminal. Upper lip moderately thick with microscopic cilia or entire, not papillose. Jaws toothless. Free space along chin between opercles almost closed. Preorbital margin serrated. Slope of opercular margin steep. Gill-rakers numerous. Rostro-dorsal profile not remarkably convex. Depth about 4 to $4\frac{1}{2}$ in standard length. Scales in about 30 to 35 transverse series between head and hypural joint. About 21 predorsal scales. First dorsal origin nearer snout than caudal base. Second dorsal and anal origins about opposite or anal slightly anterior. Anal fin with nine soft rays. Pectorals not elongated, their base at or over middle of body. Axillary scales present. Depth of caudal peduncle less than or subequal to half head.

The above combination of characters distinguishes this genus from all others in the family. It seems, however, closest to the group known as *Liza*. The name *Liza*, Jordan and Swain (Proc. U.S. Nat. Mus., vii., 1884, p. 261) was proposed for Old World mullets in which the adipose eyelids were obsolete. The genotype was the European Grey Mullet, *Mugil capito* Cuvier, which, according to Gunther (Cat. Fish. Brit. Mus., iii., 1861, p. 439), differs from the Australian fish here diagnosed in having the mandibular angle much less obtuse, the space between opercles on chin obtusely rounded anteriorly and more open, the maxillary exposed, and in having many more scales (45 or 46) along body and (28 or 30) predorsally; there are other differences in proportions of head and body, so that the best course to pursue is to provide a new name for the Australian fish.

Besides the genotype, the two mainly eastern Australian species, "*Mugil*" *argenteus* Quoy and Gaimard, and *M. compressus* Gunther, may tentatively be included in the new genus, *Moolgarda*, though at the time of writing, I have no specimens of these at hand. Gunther (*loc. cit.*) describes them as having L. tr. 10, flatter interorbitals, no axillary pectoral scales and with very different proportions, etc. *Moolgarda compressa* has the maxillary exposed, but *M. argentea* has the maxilla hidden.

MOOLGARDA PURA, *sp. nov.*

Brown-back Mullet.

(Fig. 8.)

D. iv./i., 8; A. iii., 9; P. ii., 16; C. 14 branched. Sc. 36 to hypural joint and 5 on caudal base. Tr. 14. Predorsal 21. Ten scales down side of caudal peduncle and $6\frac{1}{2}$ between dorsal fins.

Head (100 mm.) 3.9, depth (92) 4.2 in standard length (390). Snout (24) 4.16, eye (17) nearly 5.9, interorbital (48) 2 in head. Internarial, 32; width of head, 69; pectoral, 86; postorbital, 55; depth of caudal peduncle. 39; length to caudal fork, 440; total length, 490 mm.

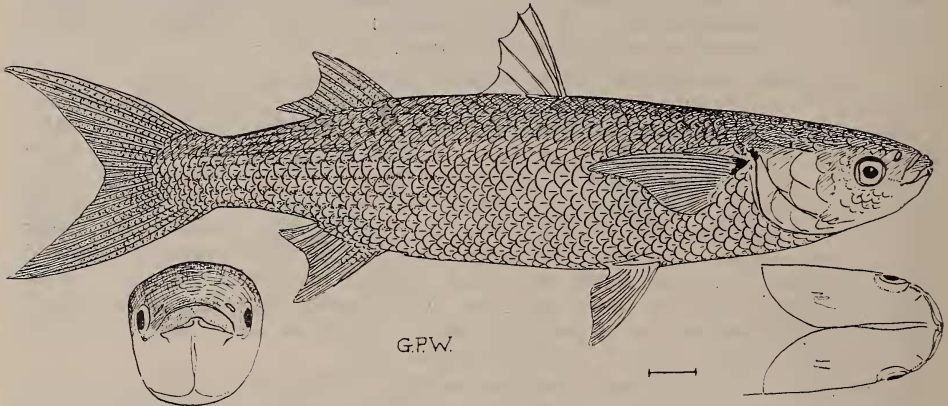
Snout broadly rounded, not excavated.

Three rows of cheek scales; a couple of notched scales near preopercular angle. Four notches across vertex and along grooves over opercles. A groove before vomer.

Cleft of mouth broader than deep. No teeth on jaws or palate. Jaws protusible. Upper lip deep; lower slender with double symphyseal knob. Lips without papillae or visible cilia, with cultrate edges and no transverse groove. Maxilla sheathed under preorbital when mouth is closed, reaching to below the posterior nostril on each side. Nostrils nearer one another than to eye. Preorbital serrations obsolescent.

Eye situated rather low. Adipose eyelids not nearly reaching pupil. Interorbital broadly convex, scaly. Opercles close together along median line; posterior margin of operculum subvertical. Gill-rakers slender, about 68 on lower part of first branchial arch.

Body rather slender, its maximum depth at origin of first dorsal fin, its width greatest where it joins head, the dorsal profile weakly convex. Scales large, cycloid, with clear entire distal margins and about five basal radii. Large axillary scales to paired fins. Small scales extend over



8. Brown-back Mullet, *Moolgarda pura*, Whitley. Holotype from Point Cloates. Also anterior and ventral aspects of head.

pectoral and caudal fins proximally. Soft dorsal and anal fin only scaly anteriorly. Each scale of body with central streak; most of head scales without these.

Origins of dorsal fins over 14th and 26th body scales. First dorsal origin midway between tip of snout and hypural joint. First dorsal spine reaching more than half its distance from second dorsal fin. Anal origin behind level of that of second dorsal. Pectoral shorter than head, not reaching level of first dorsal spine, extending to 11th body scale. Caudal forked.

Colour in life, brownish on top of head and anterior part of back. Generally greyish elsewhere to silvery or white below. Some faint stripes of darker grey along junctions of scale rows. Eye whitish with black pupil and a yellow crescent over upper part of iris. Fins mostly greyish; ventrals white; pectorals light olivaceous-yellow with conspicuous blue axillary blotch; caudal with brilliant blue iridescence.

Described and figured from a female specimen 490 mm. (about 19½ inches) long. Gonads at stage IV or late III of G. Kesteven's classification (C.S.I.R. Bull. 157, 1942, p.48).

Locality.—Point Cloates, Western Australia; in schools in shallow water over sand, 6th October, 1944.

Native name: Moolgarda.

Variation.—A series of co-types, up to 665 mm. in total length, from Shark's Bay, Exmouth Gulf, Onslow and Broome, Western Australia, exhibits

little variation. The maxilla may be exposed in some examples and the anal origin a little in advance of level of second dorsal origin. Larger specimens have these fins scaly all over. The transverse rows of scales vary from 29 to 35 between head and hypural and are not always bilaterally equal in number. Axillary scales were absent from the pectoral in one specimen. The l.tr. varies from 11 in small to 15 in large specimens. The species grows to at least 26 inches long and is said to be common in shallow water all the year round. It is the Yellowfin Mullet of Shark's Bay (because of the yellowish pectoral fins) but I think Brown-back Mullet would be a preferable vernacular name because the brown backs are very characteristic as these fishes are seen swimming near the surface in shallow water.

Subgenus *PLANILIZA*, nov.

Orthotype, *Moolgarda* (*Planiliza*) *ordensis*, sp. nov.

A mullet in general similar to the new genus *Moolgarda* described above, but distinguished by having (1) the interorbital broad, flat and depressed; (2) the free space along chin between interopercles broadly open; (3) only about sixteen predorsal scales, and (4) with anal origin in advance of level of second dorsal origin. There are many minor differences as well, e.g., large axillary scales are not developed at the pectoral fins, the body scales are larger and fewer, and small scales extend over most of the fins.

MOOLGARDA (*PLANILIZA*) *ORDENSIS*, sp. nov.

Ord River Mullet.

(Fig. 9.)

D. iv./i., 8; A. iii., 9; P. ii., 16; C. 12 branched. Sc. 31 to hypural + 2 large and several small on caudal. L.tr., 11. Predorsal 16. Seven or eight scales down side of caudal peduncle and between dorsal fins.

Head (84 mm.) 3.8, depth at first dorsal origin (75) 4.3 in standard length (325). Snout (26) 3.4, eye (13) 6.8, interorbital (40) 2.2, and depth of caudal peduncle (35) 2.5 in head.

Depth of cleft of mouth (6.5) 4.3 in its width (28). Distance between anterior nostrils, 23; width of head, 61; length of pectoral, 55; trunk, 140; distance between origins of dorsal fins, 86; head without snout, 67; first dorsal spine, 36; postorbital, 52; length to caudal fork, 370; total length, 390 mm.

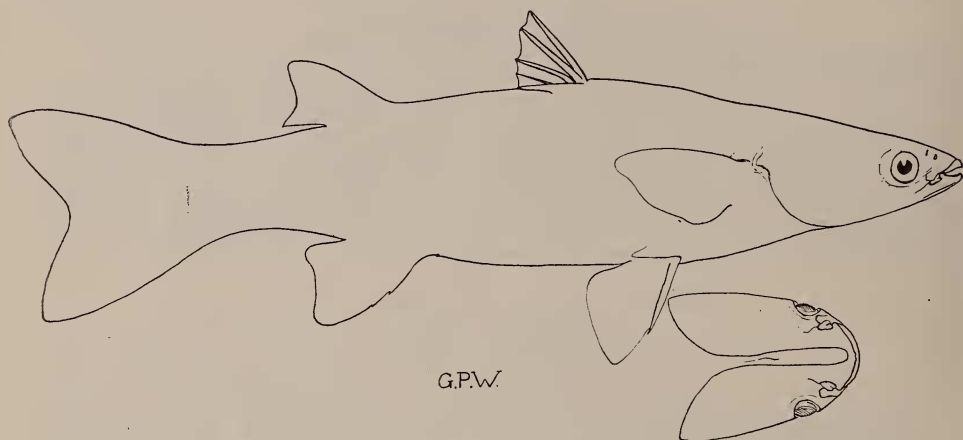
Head elongate, very depressed, its depth about half its length, its profile acute-angled; snout broadly rounded. Four rows of cheek-scales. Two weakly notched scales near preopercular angle, others along sides of top of head. Eyes large. Adipose eyelids obsolescent, not nearly covering one-third of eye posteriorly. Snout longer than eye. Nostrils closer together than to eye. Interorbital broad and flat. Jaws protrusible. Mandibular angle very obtuse. Maxillary exposed and reaching beyond posterior slit-like nostrils. Upper jaw terminal. Upper lip not notably thick, toothless but with microscopic cilia, not papillose. A series of tooth-like bumps behind lower lip, which has a round symphyseal knob. No transverse groove on lips. A groove before vomer. Tongue notched anteriorly. Free space along chin between opercles broadly open. Preorbital obscurely serrated. Opercular margin curving obliquely. Gill-rakers numerous.

Body rather deep, compressed, especially towards tail.

Rostro-dorsal profile rising acutely, rather humped before first dorsal fin.

Scales large, with minutely ciliated margins carrying on the sculpture of their surfaces, without clear edges; about six to eight basal radii. About 31 transverse series between head and hypural joint. Those on flanks present a hexagonal exposed surface. Most body scales have a thin central streak. Axillary scales at first dorsal and ventral fins but not developed at pectorals. Scales extend well over fins (except first dorsal and ventrals).

Origins of dorsal fins over about 10th and 20th body scales. First dorsal origin nearer snout than caudal base; spines thick and strong, the first



9. Ord River Mullet, *Moolgarda (Planiliza) ordensis*, Whitley. Holotype from Ord River. Also ventral aspect of head.

longest, reaching less than half its distance from the second dorsal fin, which is slightly higher than anal. Anal origin in advance of level of second dorsal origin, the fin with nine soft rays, last two with bases very close together. Pectoral much shorter than head, not reaching level of first dorsal spine, extending to eighth body scale, and with its base about middle of body. Caudal bi-lobed, weakly forked.

Colour (in formalin) grey above, lighter below. Scales on flanks with dark margins. Pectorals light in tone. Fins without marginal tones. Specimen stained green from copper in its container.

Described from a specimen 390 mm. (nearly 15½ inches) in total length. W.A. Mus. Regd. No. P.2758.

Locality.—Carlton Reach, Ivanhoe Station, Ord River, North-western Australia. Mr. C. F. H. Jenkins.

Differs from *Mugil compressus* Gunther (Cat. Fish. Brit. Mus., iii., 1861, pp. 416 and 451) in having depth one-fifth of total length, depth of caudal peduncle less than half head, interorbital much broader, in shape of interspace on chin, etc., and from other species in the key-characters given by Gunther and later authors, and incorporated in the above description.

ALDRICHETTA, *gen. nov.*

Orthotype, *Mugil forsteri* Cuvier and Valenciennes (Hist. Nat. Poiss., xi., 1836, p. 141. New Zealand. Ex *Mugil albula* Forster, Ms., not of Linné, Syst. Nat., ed. 12, i., 1766, p. 520, from America) = *Aldrichetta forsteri*.

Eyes yellow, not covered by adipose lids. Snout longer than eye in adults. Interorbital convex. Mandibular angle obtuse or rounded; upper jaw terminal, overhanging lower. Upper lip not thick, papillose, or ciliated. Minute teeth on jaws, vomer, palatines and tongue, the latter having no keel. Free space along chin between opercles open, elongate-ovoid. Pre-orbital margin serrated. Opercular margin not as steep as in other genera. Gill-rakers long, slender and numerous. Rostro-dorsal profile very gently convex, the back straight. Depth about $3\frac{3}{4}$ to $4\frac{3}{4}$ in standard length. Scales in about 45 or more transverse series between head and hypural joint. Nearly 30 predorsal scales. Anal origin before level of origin of second dorsal. Anal fin with 12 soft rays, second dorsal with 10. Pectorals pointed, shorter than head. Axillary scales not developed. Depth of caudal peduncle less than half head.

This is the yellow-eyed mullet of Australia and New Zealand ("pilchard" of Western Australia) which is usually placed in the genus *Agonostomus* Bennett (Proc. Zool. Soc., London, xiv., March, 1832, p. 166), but the type of that genus is *A. telfairii* Bennett, from Mauritius, which has eight dorsal and nine anal rays, and many other differences (see Gunther's Catalogue, iii., 1861, p. 462).

I name the Australasian genus in honour of Mr. Fred. C. Aldrich, who served for many years as a Fisheries Inspector in New South Wales and became Chief Inspector of Fisheries and Game in Perth, Western Australia, from 1911 to 1937, an able and enthusiastic fisheries investigator.

A young Western Australian specimen is described and figured hereunder.

ALDRICHETTA FORSTERI (Cuv. & Val.).

(Fig. 10.)

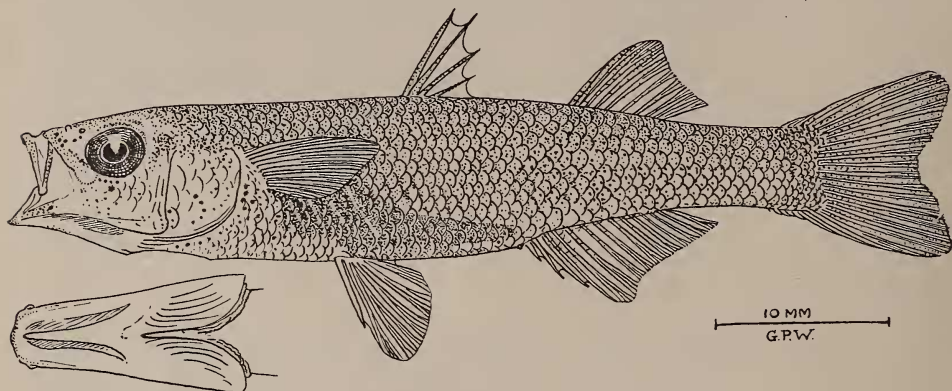
Br. 7; D. iv./i., 9; A. iii., 12. Sc. 40 plus. Tr. 14 or 15.

Head (12 mm.) 3.7, depth (9.5) 4.7 in standard length (45). Eye (3) 4, snout (2) 6; interorbital (nearly 4) and depth of caudal peduncle (4.3) about one-third head. Length to caudal fork, 52 mm.

Mouth terminal. Upper lip not very thick and not papillate. Pre-maxillary processes shorter than eye. Maxilla reaching to below anterior part of eye. Minute villiform teeth in jaws. Mandible truncately rounded anteriorly. No adipose eyelids. Snout short. Preorbital serrated. Cheeks and opercles with large scales, in 2 to 3 rows on cheeks. Nostrils large. Gill openings wide, membranes united across narrow isthmus. Gill-rakers slender, spaced, some longer than gill-fringes, about 20 on lower half of first branchial arch. Pseudobranchiae present.

Body compressed, deep anteriorly. Rostro-dorsal profile slightly convex over head, straighter along back. Body covered with deciduous cycloid scales, without differentiated margins (at least, at this stage) and four basal striae. More than forty transverse series of scales. About twenty predorsal scales (some missing in specimen). Ventral profile convex.

Origins of dorsal fins corresponding to about 14th and 26th body scales. First dorsal spine (6 mm.) reaching more than half its distance from first dorsal ray. First dorsal origin nearer snout than root of tail. Scales extend on to soft dorsal and anal fins. Anterior half of anal before level of soft dorsal. Nine dorsal and twelve anal rays. Pectoral base not entirely above



10. Yellow-eye Mullet, *Aldrichetta forsteri* (Cuv. & Val.). Young specimen from Bunbury.

middle of body, its tip not reaching to below first dorsal. Anal origin nearer first dorsal and ventral origins than to hypural joint. Axillary scale to ventral fin and an overhanging scale (which may develop into an axillary scale?) over pectoral base. Pectoral (8 mm.) much shorter than head. Caudal forked, lower lobe the longer.

General colour olivaceous, from brownish-grey on back to yellowish on sides, with the viscera bluish. Head, body, and fins densely infuscated with brownish chromatophores with black nuclei. Chin and lips speckled. Lower parts of gills plain. Eye bluish. No dark mark at pectoral base; pectorals whitish with infuscated tips.

Described from a specimen 45 mm. in standard length or about 55 mm., or 2-1/5th inches, in total length.

W.A. Museum Reg. No. P.2690, the largest of three, 37 to 45 mm. in standard length (P.2691-2).

Locality.—Bunbury estuary, Western Australia; 7th December, 1943; collected by Dr. D. L. Serventy.

Family LUTJANIDAE.

CAESIOSCOPIS, *gen. nov.*

Orthotype, *Caesiocorpi theagenes*, sp. nov.

A new squamipinnate genus with the following distinguishing combination of characters:—

Head acutely pointed, compressed, tapering ventrally, scaly except for tip of snout and chin. Eyes large, lateral. Interorbital convex, scaly. Pre-

orbital entire. Maxillary thin, truncate. Lower jaw terminal, mandibular rami elevated and extensive. Small teeth in jaws, apparently none on palate. Nostrils rounded. No barbels. Operculum with two small flat spines. Preoperculum thin, venulose, crenulated at edge. Gill-membranes united by small membrane across narrow isthmus.

Body lenticular, compressed. Scales of moderate size, ciliated, imbricate, adherent, thin. Lateral line complete, tubes straight. Vent little before anal fin, no papilla.

Dorsal with eleven heteracanth spines, anal with three. Spines and rays compactly united by membranes. Soft dorsal and anal fins with plus or minus twenty rays, covered by scales. Fins not falcate or with produced lobes. Pectorals shorter than head with lower rays branched. Ventrals behind level of pectoral base. Caudal forked. Coloration plain, mostly light green above and silvery below.

Probably nearest *Caesio* but without the elevated anterior dorsal spines of that genus.

CAESIOSCOPIS THEAGENES, sp. nov.

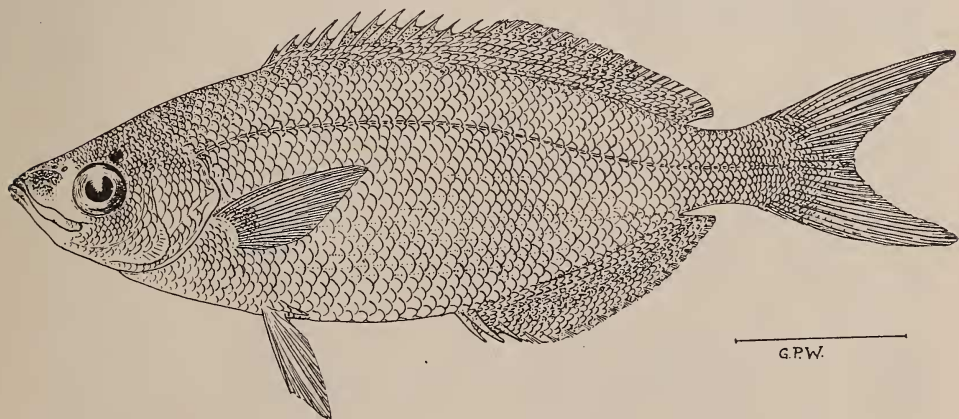
(Fig. 11.)

D.xi., 21; A.iii., 18; P.ii., 14; V.i., 5; C.16.

L. lat. 49 to hypural + 5 on tail. L. tr. about $9\frac{1}{19}$ (but some scales missing in type-specimen) to $4\frac{1}{2}\frac{1}{5}$ on caudal peduncle.

Head (30 mm.) 3.7, depth at middle of body (38) 3 in standard length (113). Eye (8.5) 3.5, snout (8) 3.7, interorbital (10) 3, pectoral (24) 1.2, and depth of caudal peduncle (11) 2.7 in head. Length to caudal fork, 126 mm.

General characters as defined for genus. Maxillary mostly sheathed by preorbital, reaching below eye. Scales evenly cover cleithrum, nape, and whole of body and extend over the fins. Middle spines of dorsal fin longest and longer than the rays.



11. Green Fusilier, *Caesiocorpus theagenes*, Whitley. Holotype from Blow-holes, north of Carnarvon.

Colour in life pale greenish above and silvery below. After preservation, generally yellowish brown, brighter yellow on tail. Eye bluish. Snout dark brown. Fins with some grey infuscations. Pectoral axil grey.

Described and figured from the unique holotype, a specimen about 140 mm. ($5\frac{1}{2}$ inches) in total length. W.A. Mus. Regd. No. P.2795.

Locality.—In an oyster-surrounded rockpool near the blowholes, coastline about 30 miles north of Carnarvon, Western Australia. Coll. G. P. Whitley, 16th September, 1944, by firing .303 bullet into rockpool.

Family SOROSICHTHYIDAE, *nov*.

A new family of the Order Berycomorphi. Allied to Trachichthyidae, but with the spinous dorsal fin separate from the soft and consisting of ten spines instead of four (in *Trachichthys*) or up to seven in other genera. Only five soft rays in ventral fins; only two anal spines. No enlarged preopercular spine. No barbels. Scales large, ctenoid, less than thirty in lateral lines. Vent near bases of ventral fins.

One monotypic genus, from South-western Australia.

SOROSICHTHYS, *gen. nov.*

Orthotype, *Sorosichthys ananassa*, *sp. nov.*

This small berycomorph fish from South-western Australia has five ventral rays, ten dorsal spines (the fourth longest), and less than thirty scales in lateral line. These characters alone clearly separate this fish generically from any other berycoid. For further details, see specific description. In facies and in form of dorsal fins, this fish rather recalls also the Holocentridae, but the latter have more anal spines. It is perhaps closest to *Paratrachichthys* Waite, 1899, but is immediately separable by its fin and scale-counts, the scales being large as in Holocentridae.

Gephyroberyx Boulenger, 1902, has a discrete spinous dorsal fin of eight spines, but has enlarged preopercular spine, vent near anal fin, smaller scales, and different formulae.

SOROSICHTHYS ANANASSA, *sp. nov.*

(Fig. 12.)

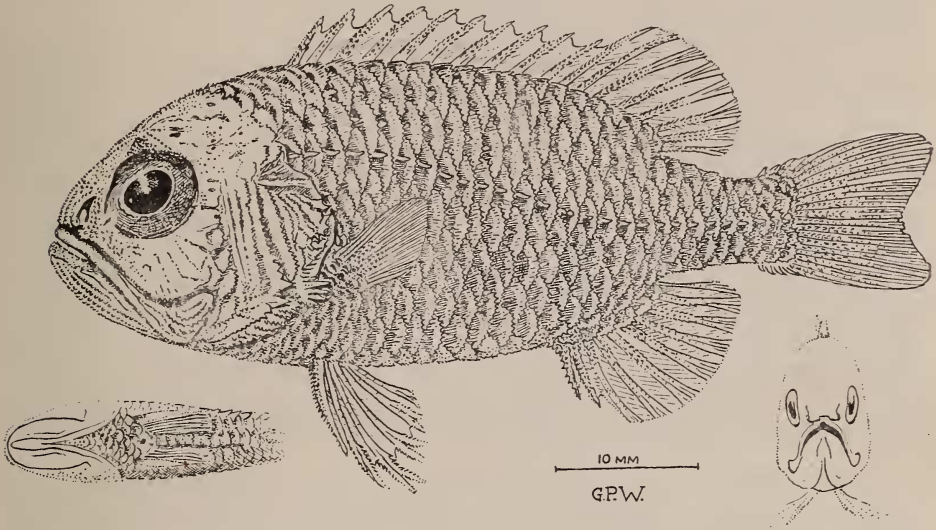
Br. 7. D.x., 8; A.ii., 8; P. 13; V.i., 5; C. 16 or 17. L. lat. left, 27; right, 24. Tr. 2/1/7.

Head (19 mm.) 2.7, depth (21) 2.4 in standard length (52). Eye (7) 2.7, snout (4) 4.7, least depth of caudal peduncle (5.4) 3.5 in head. Interorbital, 8; maxillary, 12; pectoral fin, 8; longest (fourth) dorsal spine, 6 mm.

Head large, bluntly rounded, exceedingly rugose on most of its surfaces and with numerous pores. Jaws subequal, a notch at either symphysis; no barbel; end of maxillary truncate. Mouth oblique, chin not very prominent. Bands of rough, villiform teeth in jaws. Apparently none on vomer. Nostrils large, without spines inside them. Eyes large, separated by a broad convex interorbital. A few scales on maxillary and cheeks. Suborbital shallow anteriorly. Preoperculum serrated, without very enlarged spine. Operculum with some rather irregular spines above and below and crossed

by several serrated subvertical ridges. Gill openings united across narrow isthmus. Gill-rakers slender, not numerous.

Body ovate, rather compressed; back rounded; belly flat with raised median ridge. Body covered with large, imbricate, very rugose, ctenoid scales. Abdominal scales not strongly keeled. Lateral line evenly curved, with simple tubes. Other scales on the body have similar tubes or a median



12. Little Pineapple Fish, *Sorosichthys ananassa*. Whitley. Holotype from off Bald Island. Lower left: breast and vent. Lower right: anterior aspect of head.

keel giving the appearance of several lateral lines. About 15 prebranchial scales and 12 abdominal scutes. About eight predorsal scales. Vent between bases of ventral fins. Raised scaly bases to soft dorsal and anal fins.

Dorsal originating over posterior portion of head, its spines united to one another and to soft fin by membranes. Base of spinous fin (18.3 mm.) much longer than that of soft fin (7). Rays longer than spines. Anal below and similar to soft dorsal, its base 8 mm., its spines small. Spines and rays denticulated. Pectorals and ventrals small and rounded. Caudal bilobed.

General colour, after long preservation, brownish, lighter on the raised portions of the scales, ridges on head, fin-spines, etc. Eyes bluish. Roof of mouth, gill-openings, and patches at ventral bases blackish. No striking colour-markings.

Described from the unique holotype, a specimen, 52 mm. in standard length or $2\frac{1}{2}$ inches overall. W.A. Museum Regd. No. P.734.

Locality.—Trawled from between Bald Island and Haul Off Rock, about fifty miles east of Albany, South-western Australia; 28 to 32 fathoms; Government trawler "Penguin," 1920.

Suggested vernacular name: Little Pineapple Fish.

Family EPINEPHELIDAE.

EPINEPHELUS RANKINI, *sp. nov.*

Br. 7. D. xi., 16; A. iii., 8; P. 18. L. lat. c. 118 to hypural joint. L. tr. about 20/1/60, below first dorsal spines, to about 14/1/18 on caudal peduncle.

Head (102 mm.) 2.6, depth (93) 2.7 in standard length (265). Eye (15) 6.8, snout (25) 4.0 in head. Interorbital, 22.5 mm.; snout to end of maxilla, 50; depth of maxilla, 14; length of pectoral fin, 51.

No rugosities, bony ridges or mucous cavities on head. Head large, deep, mostly scaly behind about level of eye, though the anterior and cheek scales are minute and vestigial. Eyes remarkably small, interorbital broadly convex. Preopercular margin serrated, with several slightly enlarged serrae around its angle. Other serrae below suboperculum and at interoperculum. Opercular flap rounded, its upper border feebly curved. Three opercular spines, the uppermost most anterior, and further from the middle (most posterior) one than the latter is from the lowest spine. Lower jaw projecting strongly. Maxillary roundly truncate, its depth subequal to diameter of eye, naked, with small supplemental bone, only visible through dissection. Tongue spatulate, blunt anteriorly, smooth. Small cardiform teeth on jaws, vomer, and palate. Outer ones and a couple near front of upper jaw a little enlarged, and not depressible, but no canines; teeth are in about three rows along sides of mandibles. Nostrils circular, the anterior with skinny rim, but no flap or tentacle. Gill-rakers slender, flattened, internally spinulose, the longest (12 mm.) longer than gill-fringes but shorter than eye; there are 9/15 on first branchial arch.

Body robust, deepest at level of gill-flaps. Very small ctenoid scales cover the body and extend on to most of the fins and cover the back, breast and cleithrum where, however, they tend to become smaller or vestigial and merge into a leathery integument. The slightly ascending scale-rows cross the course of the lateral line which is normal in position, though along the caudal peduncle it is slightly nearer the dorsal than the ventral profile.

Base of spinous dorsal slightly longer than that of soft. Membranes of spinous fins with small pencils. First dorsal originating well forward, over opercular flap. The fourth spine is longest (38 mm.), longer than last spine (29) and subequal to longest dorsal ray. Third anal ray longest, more than half longest anal ray. Pectorals rounded, eighth ray longest. Ventrals behind pectoral base, the fin rounded, second ray longest, slightly shorter than pectoral, not nearly reaching vent. Caudal truncate.

General colour, in formalin, dark greyish-brown to chocolate on head, body and fins, becoming light in tone along chin and breast. Large, irregular cream spots occur asymmetrically over most of fish. No transverse bars on body or saddle-shaped blotch on tail. On the sides, the spots are mostly oval with the long axis vertical and nearly as long as eye; they are smaller on the breast and the isthmus is plain dirty greyish or cream. The spots are much smaller on the fins and are indistinct on the first dorsal and ventral fins. Unpaired soft fins with an extremely narrow cream border; inframarginally these fins also the ventrals are almost black. A grey smudge, but not a definite moustache-mark above maxilla. Eye bluish with dull pale yellow iris.

Described from the holotype of the species, a specimen 330 mm. or 13 inches overall.

Locality.—Netted off Onslow, Western Australia; Mr. F. J. Rankin, late 1944. W.A. Museum Regd. No. P.2847.

In comparison with all the numerous species of *Epinephelus*, it may be stressed that the small eyes, conspicuous spots, truncate caudal fin, ventral fins not reaching vent, and sixteen dorsal rays are diagnostic characters for those to whom a new species, however expertly described, is a *nomen nudum* unless compared with its congeners.

Named after Mr. F. J. Rankin, postmaster at Onslow, Western Australia, in appreciation of his valued specimens and notes of fishes from his district.

EPINEPHELUS SPIRAMEN, *sp. nov.*

D.xi., 17; A.iii., 8; P.17. L. lat. circa 68 to hypural joint (overlying about 48 tubes), plus some small scales on caudal base. L. tr. 9/1/36 at origin of first dorsal, to 8/1/10 on caudal peduncle.

Head (84 mm.) 3.1, depth (72) 3.6, pectoral (52) 5.0 in total length (263). Eye (18) 4.6, interorbital (12) 7 in head. Snout (16) less than eye.

Only vestigial scales on top of head; none on maxilla, which reaches below posterior half of eye and is truncately rounded. Opercular flap blunt.

Three opercular spines, the topmost anterior and the middle one largest and most posterior, and equidistant from the top and bottom ones. Preoperculum serrate, serrae slightly enlarged at angle. Nostrils oval, the anterior ones lipped. Supplemental bone united to maxillary by a low ridge; width of maxilla more than half eye-diameter.

Cardiform teeth on jaws, vomer, and palatines, some enlarged near symphyses and along sides. No very large canines.

Tongue long and spatulate, toothless. Gill-rakers 5 + 1 + 8 + 4 rudiments on first branchial arch, the middle raker enlarged, 6.5 mm. long.

All of body, back included, scaly. Lateral line normal.

All fin margins rounded. The third to fifth dorsal spines are longer than the others. Second anal spine (26 mm.) longer and stronger than third, but shorter than anal rays.

Life-colour mostly a rusty to brick red, the edge of each scale darker; ground-colour of head olive-greenish.

A white band across each side of lips; a white bar from behind maxilla to interopercle, continued on anterior part of breast but not meeting its fellow on the other side; two more oblique white bars before base of pectoral. Body crossed by six broad brick-red cross-bars descending slightly obliquely forwards. Two dark cross-bars on top of head. A large dark brown blotch behind eye. Eye olivaceous above and dull reddish-brown iris. Nostrils red. Inside of mouth white.

First dorsal fin mostly pale dirty-brownish with inframarginal brick-red stripe having an olivaceous blotch on membranes between each spine; distal pencils white. Other fins rusty-red with yellowish tinge distally and margined narrowly with milky white. Minute milky spots on membranes of ventral and anal fin, in pectoral axil, and where dorsal fins join the back.

Described from a female specimen, 263 mm. or 10½ inches in total length. W.A. Museum Regd. No. P.2796.

Locality.—Rocks near the blowholes, on coastline about 30 miles north of Carnarvon, Western Australia; handline, on kangaroo steak bait.

Similar in facies to the *Serranus stoliczkae* of Day's "Fishes of India," 1875, but that species has more numerous gill-rakers, maxilla reaching posterior border of eye, deeper body, different scale-counts, spots on head and shoulders, etc. From other species my novelty is separable by the key characters given by Boulenger (Cat. Fish. Brit. Mus.).

Family TERAPONTIDAE.

Genus MESOPRISTES Bleeker, 1845.

MESOPRISTES JENKINSI, sp. nov.

D. xiii., 12; A. iii., 8; P. 16. L. lat. 52 to hypural. L. tr. 8/1/17. Cheek scales in about 8 or 9 rows.

Head (42 mm.) 2.7, depth (45) 2.5 in standard length (116). Eye (9) 4.7 in head, shorter than snout (13) and interorbital (12). Fifth dorsal spine (15) subequal to fifth dorsal ray (15.5). Second anal ray, 19 mm.

General characters as in Ogilby and McCulloch's description of *argenteus* (Mem. Qld. Mus., v., 1916, p. 115). Preorbital not serrate, notched to received tumid lip.

Maxillary not entirely covered by lip. Interorbital and cranial ridges obsolete externally.

Lower opercular spine not greatly enlarged.

Nostrils well separated.

Supra-cleithrum exposed, denticulate. Longest dorsal spine (5th) longer than most of the rays. Second anal spine very strong, longer than 3rd, subequal to rays. Caudal emarginate.

Colour fairly uniform dark slate grey. No conspicuous markings and no dark spot on bases of scales.

Total length, 6 inches.

Described from the holotype in the W. Australian Museum. (No. P.2763.)

Locality.—Ivanhoe Station, Ord River, North-western Australia; collected by Mr. C. F. H. Jenkins, Government Entomologist of Western Australia.

Differs from *Mesopristes argenteus* (Cuv. & Val.) in dorsal fin formula and smaller dorsal spines, more pectoral rays, and in proportions. From other species in the key characters given by Ogilby and McCulloch (Mem. Qld. Mus., v., 1916, p. 101) and Fowler (Bull. U.S. Nat. Mus., 100, xi., 1931, p. 326). A doubtful Western Australian record of "*Sparus argenteus*" may refer to this species.

Family SCIAENIDAE.

SCIAENA ANTARCTICA REX, subsp. nov.

Similar to *S. antarctica* Castelnau, 1872, as described and figured by Ogilby (Mem. Qld. Mus., vi., 1918, p. 70, pl. xxi.), but with a smaller eye in relation to the head (of which it is about one-seventh) and with D.ix., i., 24 instead of 27 to 28 as in eastern Australia. The mouth extends behind eye. A.ii., 7; P.ii., 17; C. 15. Head, 238 mm.; depth, about 205; eye, 31; preorbital, 27; interorbital, 47; snout, 58; maxilla, 95; depth of caudal

peduncle, 63 mm. L. lat., 57 + 5. L. tr., 9/1/15. Total length, 990 mm. Weight, cleaned, 19 lb. Preoperculum as described by Castelnau. Tail with three or four rows of transverse spots; pectoral axil yellowish.

A second specimen, 900 mm. long, was 16½ lb. whole weight, a developing female, ova not visible Gill-rakers 4/8 to 9 as in *antarctica*.

Locality.—Onslow, Western Australia; November, 1944.

Corvina jubata Bleeker, 1855, from Borneo has 24 dorsal rays but differs largely in proportions.

Family HISTIOPTERIDAE.

Genus PARISTIOPTERUS, Bleeker, 1876.

PARISTIOPTERUS GALLIPAVO, Whitley.

Paristiopterus gallipavo Whitley, Proc. Roy. Zool. Soc. N.S. Wales, 1943-44, August 31, 1944, p. 28, fig. 4.

D.vii., 17; A.iii., 9; P.ii., 15; V.i., 5; C. 15 branched rays. L. lat. 82.

Head (169 mm.) and depth of body (165) about 3.5 in length to end of middle caudal rays (590). Eye (26) 6.5, orbit (35) 4.8, interorbital (42) 4.0, upper jaw (62) 2.7 in head. Snout, measured from orbit to anterior part of preorbital, 71 mm. Pectoral, 121; ventral spine, 98; second anal spine, 59; lower caudal lobe, 120; dorsal spines, 7, 11, 216, 232, 193, 190 and 168 mm. from bases to tips; first (longest) dorsal ray, 88. Depth of caudal peduncle, 38.

Upper profile concave before eyes, bulging over occiput; general form rather deep and compressed and slightly tapering posteriorly. Lips thick and rugose, the upper terminal. Maxilla not reaching level of nostrils and mostly sheathed below preorbital posteriorly. A bunch of large moveable canines at middle of each jaw followed by broad bands of large, round, blunt molars in up to 5 rows in upper and 2 (rarely 3) in lower jaw. No vomerine or palatine teeth. Angle of mouth nearer to vertical from eye than to end of snout. Nostrils large, oval, the posterior largest. Head scaleless, except for some beneath skin on cheeks. Interorbital rising to median crest, on each side of which are several short bony ridges and some rugosities. Other rugosities around eye, across preorbital, and some fine ridges on opercles. Eyes large, not filling orbit but surrounded by wide lids, situated in posterior half of head. Chin coriaceous; sides of head smooth. Preoperculum with rounded angle, almost straight posterior border and coarsely serrate edges. Operculum with round membranous flap. No spines. Cleithrum and supracleithrum exposed, with many fine ridges, pectoral axil naked and smooth.

Body covered with rather large, round, thin cycloid scales, not arranged in regular rows. Lateral line with simple tubes. On the right side (but not the left) there are three tubes running along the side in advance of the median line from the caudal peduncle and below the ascending curve of the lateral line between the ends of the dorsal and anal fins, thus making a Y-shaped junction there, but this feature is doubtless abnormal. Dorsal and anal fins with scaly sheaths. No enlarged axillary scales.

Spinous dorsal fin preceded by a procumbent spine. The first and second dorsal spines are short but the remaining five are elongate, compressed and wavy, forming a crest, their lengths are given in the dimensions above. The base of the spinous dorsal fin (116 mm.) is shorter than that

of the soft portion (160). Anal fin with three spines, the first very small, the second very long, compressed and strong, the third smaller than the second; first two anal rays considerably longer than the others. Pectorals long and rather pointed. Ventrals similar in shape to pectorals but longer (125 mm.) and with a large, strongly compressed spine. Caudal forked, the upper lobe the longer; median rays, 50 mm. long.

General colour when fresh, pearly-greyish, becoming darker or suffused with pinkish on head and along back where there are numerous conspicuous round brownish spots up to about 4 mm. in diameter. Eyes and fins greyish.

Described from the unique holotype of the species, a specimen 630 mm. or just over two feet in total length. It has, unfortunately, been gutted, so details as to gill-rakers, viscera, sex, etc., cannot be given.

Locality.—Found floating dead off Rockingham, Western Australia, on February 23, 1944. W. Aust. Museum Regd. No. P.2589.

Distinguished from all other boarfishes by the following combination of characters: (1) Base of spinous dorsal fin shorter than that of soft; (2) posterior dorsal spines elongated, and longer than the rays; (3) anal spines three. The last two characters especially distinguish this fish so markedly from the type of *Paristiopterus (labiosus)* that the new Western Australian species deserves subgeneric separation as *Glauertichthys*, subg. nov.

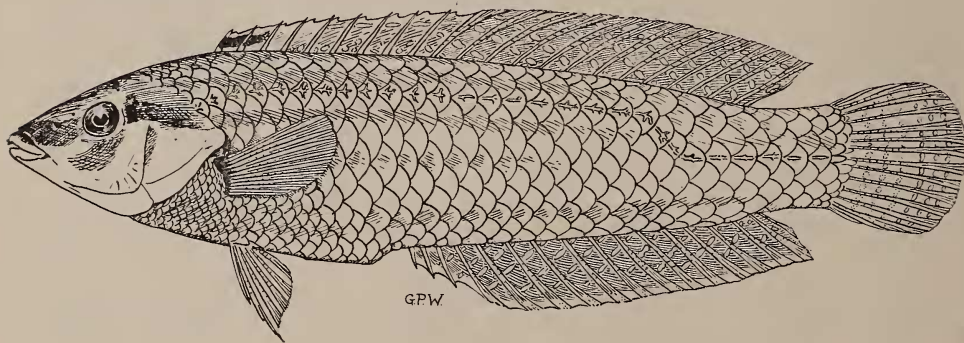
Family CORIDAE.

Genus CHOEROJULIS Gill, 1862.

CHOEROJULIS BROWNFIELDI, sp. nov.

(Fig. 13.)

D.ix., 14; A.iii., 14; P.ii., 11; C. 12. L. lat. 28. L. tr. 2/1/10 to 4/1/4 on caudal peduncle.



13. Wrasse, *Choerojulis brownfieldi*, Whitley. Holotype from Garden Island.

Head (34 mm.) 3.7, depth (33) 3.8 in standard length (125). Eye (6) 5.6, snout (10) 3.4, interorbital (8) 4.2 in head.

Head naked. Preoperculum entire. Lips fleshy, mouth not reaching as far as eye. Several separate, forwardly directed conic teeth in each jaw,

anterior ones largest, there being two canines in front of each jaw. Posterior canine present in upper jaw. Lateral teeth not coalesced; no cutting edges or flared-out teeth.

Form slender, very compressed. Scales cycloid with 26 basal radii and about forty apical striae. Thoracic scales smaller than those of body. Lateral line continuous, bent abruptly behind, each scale with a tube which usually breaks into three or four branches. Two rows of scales between lateral line and back.

Dorsal and anal fins without scaly sheaths. Dorsal spines increasing in height backwards, the anterior two not divergent or differentiated. Caudal fin not covered by scales.

General colour, after long preservation, brownish, with traces of three or four darker bars along body. A dark bar crosses snout and the post-orbital and suborbital regions are dusky. There is a dark blotch behind eye, another on first two dorsal membranes and along pectoral base. The unpaired fins are olive-brownish to greyish and ornamented with pearly-green spots as in figure; the anal has a light margin. No ocellus at caudal base.

Described and figured from the holotype, 125 mm. in standard length, or nearly six inches overall. W.A. Museum Regd. No. P.110.

Locality.—Garden Island, off Fremantle, Western Australia.

A smaller incomplete specimen from Mandurah, about 55 mm. in standard length, has a blackish ocellus on posterior part of soft dorsal fin.

Differs from other species in coloration and in the combination of characters given above, especially as regards fin-formulae and dentition.

Named after Mr. Edward John Brownfield, Acting Chief Inspector of Fisheries and Game, Perth.

At first, I thought this species might have been *Pseudojulis lineata* Castelnau, 1873, which has not been recognised since first described, but I now consider Castelnau's species to be a synonym of *Ophthalmolepis lineolatus cyanogramma* Richardson, 1850, a fairly common South-western Australian fish with which Castelnau's description agrees better in squamation, formulae, and dental characters.

Family BODIANIDAE.

Genus CHOERODON Bleeker, 1845.

CHOERODON PAYNEI, *sp. nov.*

(Fig. 14.)

Br. 6. D. xiii., 7; A. iii., 10; P. ii., 14; V. i., 5; C. 11 branched rays. L. lat. 29. L. tr. 3/1/9. Predorsal sc., 5; preventral, 8.

Head (104 mm.) 2.6, depth (114) 2.39 in standard length (273). Eye (16) 6.5, interorbital (24) 4.3 in head.

Head largely naked; about six rows of spaced, small, circular cheek-scales; other non-imbricate scales on operculum. Mouth reaching to below space between nostrils. Canines peg-like, not flared out or very curved; the middle two in upper jaw much larger than the outer two. In the lower jaw the outer two are larger than the inner and slope outwards. Behind the canines is a row of coalesced teeth along each side of each jaw. No

posterior canine. Lips normal. Tongue very small, rounded, plicate. Preoperculum entire. Gill-rakers short, tufted; 7 plus 9 on first branchial arch.

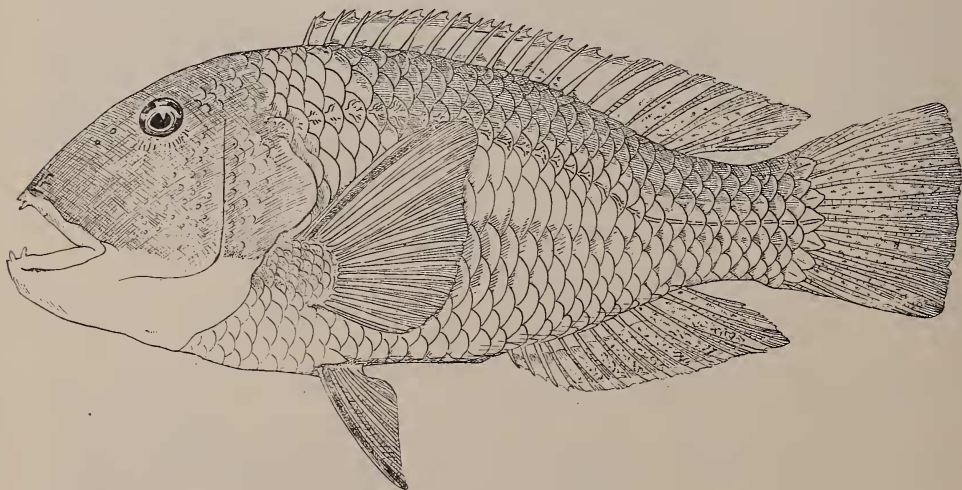
General habit of body and fins as usual in the genus and as illustrated here. No raised scaly bases to fins. Lateral line continuous, its tubes arborescent. Thoracic and precaudal scales normal. Ventral fins not reaching anal. Caudal margin convex.

General colour of the living fish pale apple-green. A broad pale rusty bronze bar along each side of posterior part of body. Iris peacock-blue with slight bronze spot at top and on each side (viz., at 12, 3 and 9 o'clock). A pale peach tinge below face. Several pale bluish bars in various directions near premaxillae, vanishing after death. Most of lips and teeth pale blue. A coppery bar along lower edge of lower lip. Inside of mouth white. Dorsal fins greyish, with a bright blue border and inframarginal band of coppery brown. Anal green proximally to greyish distally and crossed by reticulations of dull coppery. Caudal similar, but with greyish-blue margin and bright blue upper and lower tips. Pectorals green, peacock-blue towards tip and with coppery base. Ventrals mostly pale green, but the spine is blue, first ray coppery, and third bluish-green.

Described and figured from the holotype of the species, a specimen 273 mm. in standard length or nearly 13 inches overall.

Locality.—Off east coast of Dirk Hartog Island, Western Australia; hand-line, 25th August, 1944; coll. G. P. Whitley.

Smaller examples show some colour-variation. The rusty bronze bar along the posterior part of body may be broken up into several bands of the same colour. A light grey area may appear across the shoulders after death, but there are no light oval patches, black areas, or saddle-shaped blotches as in some other species of the genus.



14. Tuskfish, *Choerodon paynei*, Whitley. Holotype from Dirk Hartog Island. G.P.W. del.

This novelty is distinguished from its congeners mainly by its coloration, but also by its shape and proportions, as figured herewith. It is named in honour of Flight-Lieutenant George Herbert Payne, with whom I was associated in some experiments on sharks in Western Australia in 1944.

Family LIMNICHTHYIDAE.

LIMNICHTHYS FASCIATUS MAJOR, *subsp. nov.*

Limnichthys fasciatus Waite, Rec. Austr. Mus., v., 1904, p. 178, pl. xxiii., fig. 4. Lord Howe Island.

This small rock-pool fish is known from Lord Howe Island, north of New Zealand, and New South Wales, where it grows to a length of less than two inches. In a collection of fishes made by Mr. W. B. Alexander at Garden Island, Western Australia, I was surprised to notice a specimen of this species 2-1/3rd inches long (W.A. Mus. Regd. No. P.121). This specimen greatly extends the known range of the genus and differs sufficiently from Waite's description to be regarded as the type of a new subspecies, for which I propose the name *major*.

D. 21. A. 24. L. lat. 41.

Head (12 mm.) 4.1, depth (6) 8.3 in standard length (50). Eye (2) 6 in head. Length of caudal subequal to depth of body. Eyes less than half a diameter apart. Otherwise as in typical *L. fasciatus*.

Family BLENNIIDAE.

Genus DASSON Jordan and Hubbs, 1925.

Dasson Jordan & Hubbs, Mem. Carnegie Mus., x., 1925, p. 318. Orthotype, *Aspidontus trossulus* Jordan & Snyder, 1902. *Id.*, Norman, Ann. Mag. Nat. Hist. (11), x., 1943, p. 806.

Ostreoblennius Whitley, Mem. Qld. Mus., x., 1930, p. 20. Orthotype, *Petroscirtes* (O.) *steadii* Whitley, 1930.

DASSON DUPERREYI, *sp. nov.*

D. iii., viii., 20 = 31; A. ii., 20; P. 14; V. 2; C. 11.

Head (24 mm.) 3.7, depth (18.5) 4.8 in standard length (89) measured to hypural joint. Eye (6) 4, and interorbital (7) 3.4 in head. Snout, 7.25; gill-opening, 3.25; pectoral, 14; depth of caudal peduncle, 9; and length to end of middle caudal rays, 110 mm.

Snout blunt, anterior margin of lower jaw almost straight; upper profile of head convex. Mouth reaching to below eyes. Lips without folds, the upper overlapping the lower laterally. A slightly curved row of moveable incisor teeth anteriorly, flanked by enlarged canines, one on each side, much larger in lower than in upper jaw. Eyes large, their diameter less than the width of the almost flat interorbital. No crest or flap on top of head. A small mental cirrus on each side and a small tentacle over the hinder part of each eye; a minute cirrus at nostril and a tiny flap at origin of lateral line. Gill-openings reduced to small orifices above level of pectorals. Pores around eye and preoperculum.

Head and trunk subequal to rest of body without caudal fin. Body smooth, compressed. Lateral line reduced to a few simple tubes ascending from over gill-opening to below dorsal rays and dipping slightly to end over level of vent. A minute papilla behind vent at origin of anal fin.

Fins not enveloped by skin. Dorsal and anal fins attached by membrane to caudal peduncle immediately in advance of roots of caudal rays. Dorsal originating over preopercle, the first three spines rather long, soft, and curved and with more extensive membranes than those following, but not separated as a distinct fin and none of them produced. The following eight spines are little shorter than the twenty rays posteriorly. Anal with two short soft spines and twenty rays. Pectorals short, rounded. Ventral spine obsolete, two functional rays, with trace of third fused to second. Caudal emarginate, with the longest rays a trifle produced.

General colour (in alcohol) dull brownish, becoming lighter or yellowish on lower part of head and body. Most of fins yellowish. Upper half of head and body with a broad dark brown transverse band from snout to root of tail; this is broken up on the body by V- or W-shaped light areas descending from the back in about eight or nine places. A dark blotch on caudal base. Throat and belly without markings. Five or six dark spots or oblique marks between angle of mouth and pectoral base. A dusky bar along lower lip and a small dusky crescent below each angle of mouth. Teeth, gill-opening, paired and caudal fins yellowish. Dorsal and anal fins with numerous irregular brown blotches on rays and membranes, particularly dusky and tending to form a continuation of the dark body-bars on the proximal half of the dorsal fin. A blackish tip to first dorsal spine. Eye dull blue.

Described from the holotype of the new species, a specimen, 89 mm. in standard length or 4.45 inches overall. W.A. Museum Regd. No. P.2152.

Locality.—Shark's Bay, Western Australia. Coll. John Gregory in 1940.

Paratypes: Several specimens in the W.A. Museum, Perth. One, 50 mm. long, has numerous round whitish spots on the sides, ten of these being enlarged and forming a row just below median line of body. D. 31; A. 22; V. 3. Regd. No. P.2153.

Other paratypes in the Australian Museum, Sydney (Regd. No. IB.323-5 and 347), collected by me from dredgings in Useless Inlet, Shark's Bay, 28th June and 6th July, 1939.

The species is named after ensign Louis Isidore Duperrey, one of the naturalists of the "Uranie" expedition, which visited Shark's Bay in 1818.

This novelty is distinguished from its congeners by its fin-counts, proportions, and coloration. The cephalic tentacles are also probably characteristic, though these are not always stressed in descriptions of allied species. From *Dasson variabilis* and *viperidens*, it is distinguished by having more than 30 dorsal spines and rays and by its colour-markings. The genotype, *D. trossulus*, has a light band along lower part of head and fewer anal rays. *Dasson duperreyi* is near *D. icelii* (Ogilby, 1894) from Lord Howe Island and *D. steadi* (Whitley, 1930) from eastern Australia, but lacks the produced dorsal spines and more slender bodies of those species. Working in Perth, I am unable to consult descriptions of some of the other species mentioned by Norman.

Genus GRAVICEPS Fowler, 1903.

Graviceps Fowler, Proc. Acad. Nat. Sci. Philad., lv., 1903, p. 170. Orthotype, *Petrosirtes elegans* Steindachner, 1876, from Japan.

GRAVICEPS ALEXANDERI, sp. nov.

D. xiv., 19 = 33; A. ii., 25; P. 13; V. 2; C. 11 et lat. brev.

Head (8.5 mm.) 3.6, depth (6) 5.1 in standard length (31).

Anterior profile bluff. Eyes large, their diameter (2.3 mm.) exceeding interorbital width, and snout. Nostrils with raised flaps. No crests or tentacles on head. Maxillary reaching below middle of eye. Upper lip with a fold posteriorly, lower lip with overhanging lateral flap. Anterior margin of lower jaw transversely rounded. Less than twenty, slightly moveable incisors in each jaw, flanked by a lateral canine larger and more interior in lower jaw. Pores around eye and preopercle. Gill-opening small, extending very little before pectoral base; gill-membranes broadly united with isthmus.

Body compressed, naked. Lateral line reduced to a few simple tubes anteriorly. A small papilla before first anal spine. Depth of caudal peduncle, 2.5 mm.

Dorsal fin not notched, the spines not differentiated. No produced spines or rays, or branched rays. Dorsal and anal fins united to caudal peduncle by membrane. Caudal free, rounded.

General colour (in alcohol) light yellowish-brown, conspicuously ornamented with darker, reddish to purplish-brown markings. On the body, these take the form of nine crossbands, most of which have, at the middle of the sides, an anterior and posterior dark bluish spot, separated by two myomeres; the middle of each crossband is lighter in tone than the rest and some of the bands continue on to the dorsal fin. There are not several rows of spots on the body posteriorly. Chin and throat crossed, or almost crossed, by four or five irregular purplish-brown bars which extend up to cheeks. Eye bluish, with a crescent-shaped blue spot a little behind it; a lighter and more diffuse blue mark behind gill-opening. Belly plain yellowish. Anterior part of pectoral base brown. The paired fins and the caudal are mostly yellowish, with slight infuscation. The dorsal and anal are irregularly blotched with rusty brown and the fin-ray tips are cream.

Described from the holotype of the species, a specimen nearly $1\frac{1}{2}$ inches long, the smaller of two in the W.A. Museum, Perth (Regd. No. P. 671).

Locality.—Fremantle, Western Australia; living in holes in the wharf piles, October, 1919; coll. by W. B. Alexander.

A larger paratype (No. P. 398), caught on 10th November, 1913, at Sandy Island, Houtman's Abrolhos, is $2\frac{3}{10}$ inches long and has D. xiv., 21; A. ii., 25; a dusky blotch on middle of second dorsal fin.

Three specimens (perhaps the male of the species), from the Percy Sladen Expedition to the Abrolhos (W.A. Mus., P. 395; collector's No. 7) are 42 to 49 mm. in standard length and show some colour-variation. The largest of them has general characters as in the typical *G. alexanderi*, described above, except for the following differences.

D. 34; A. ii., 23; P. 13; V. 2; C. 11 et lat. brev.

Head (10 mm.) 4.9, depth (8) 6.1 in standard length (49). Eye (3) slightly less than snout, but more than interorbital width (less than 2). Depth of caudal peduncle, 3.7 mm. Maxillary just reaching below posterior half of eye. Gill-openings entirely above level of pectoral base. Some of the caudal rays produced. Length of posterior dorsal fin-rays about equal to depth of body beneath them.

General colour (in alcohol) almost uniform dull olive brownish, without conspicuous spots or bands. Eye and belly blue. Fins mostly yellowish. Posterior portions of caudal dark brownish. (In the paratypes the dorsal has either a dark brownish blotch on posterior rays, or the distal halves of dorsal and anal fins are dusky.)

Five other specimens (P.396; Coll. No. 8) from flats on Wallaby Island, Abrolhos; Percy Sladen Expedition, show both types of colour-pattern. The largest is 3.3 inches long and its anterior few dorsal spines are very short.

Range.—Western Australia, from Fremantle to Abrolhos.

This beautiful little fish is named in honour of Mr. Wilfred Backhouse Alexander, M.A., now residing at Oxford, who is well-known for his work on Western Australian biology. The Abrolhos examples comprise the unidentified blennies mentioned in his report on the vertebrates of that region (Alexander, Journ. Linn. Soc. (London), Zool., xxxiv., 1922, p. 483).

The genotype of *Graviceps* Fowler, 1903, is the Japanese *Petroscirtes elegans* Steindachner, 1876, which has been described and figured by Jordan and Snyder (Proc. U.S. Nat. Mus., xxv., 1902, p. 453, fig. 6). That species and also several of De Vis' species of "*Salarias*" from Queensland differ from *Graviceps alexanderi* in fin-counts, coloration, and, to a less extent, in proportions.

Family CLINIDAE.

In one of his first scientific papers, McCulloch (Rec. Austr. Mus., vii., 1908, p. 36, pls. x.-xi.) gave an admirable review, beautifully illustrated, of such species as were available to him of the genera *Clinus*, *Petraites*, and *Cristiceps*. His paper has remained a sure basis for all later work on those blennies. A few slight modifications may now be made as the result of study of certain literature and specimens which were out of McCulloch's reach.

Several type-specimens seen by me in 1937 in the British Museum (Natural History) were labelled *Cristiceps robustus* Gunther, 1867, from Melbourne. These I determined as *Clinus perspicillatus* Cuv. & Val., 1836. I have also published elsewhere (Austr. Zool., 1941) that *Petraites fasciatus* (Macleay, 1881) = *P. nasutus* (Gunther, 1861).

Some other British Museum specimens labelled *Cristiceps argentatus* were not that species in Risso's sense and had been named *Cristiceps antinectes* by Gunther in 1861. These were Western Australian representatives of the Victorian *Petraites phillipi* (Lucas, 1891), which may thus have to be reduced to the synonymy of *Petraites antinectes* (Gunther). I select the largest Freycinet's Harbour specimen as lectotype of *antinectes* (No. 58, 12-27, 67). It was very like McCulloch's figure of "*phillipi*" but had rather more ocellated coloration; D. 3/29/4; A. 25; and depth 5 in standard length.

On looking through the series in the Western Australian Museum, Perth, I find Mr. Glauert has identified *Cristiceps aurantiacus* Castelnau,

from the North Mole, Fremantle (Regd. No. P. 801), and Point Peron (P. 1309 and 1706). New record for Western Australia.

McCulloch, in 1908, was apparently not aware that Richardson had described a species from King George's Sound: *Cristiceps axillaris* (Discov. in Austr. (Stokes), i., 1846, append., p. 486, pl. i., fig. 1). This is identical with *C. pallidus* Macleay, 1881, from the same locality, which McCulloch regarded as a synonym of *C. australis* Cuv. & Val., 1836.

Thus, we have the following synonymy for the Australian species, the last names being the correct ones, according to my determinations (for references, see Austr. Mus. Mem., v., 1929, pp. 348 *et seq.*):—

<i>Cristiceps robustus</i> , Gunther	=	<i>Clinus perspicillatus</i> (add S. Austr. to range).
		„ <i>marmoratus</i> .
		„ <i>johnstoni</i> .
		<i>Petraites heptaeolus</i> .
<i>Petraites phillipi</i> (Lucas)	=	„ <i>antinetes</i> .
		„ <i>roseus</i> .
		„ <i>sellularius</i> Whitley, 1931 (N.S.W. & Lord Howe Island).
<i>Petraites fasciatus</i> (Macleay)	=	„ <i>nasutus</i> (add Sth. Qld. to range).
<i>Cristiceps axillaris</i> , Richardson	=	<i>Cristiceps australis</i> .
		„ <i>aurantiacus</i> (add W. Austr. to range).
		„ <i>argyropleura</i> .
		„ <i>tristis</i> (add Victoria to range).
		„ <i>multifenestratus</i> .
		„ <i>amaenus</i> .
<i>Petraites incertus</i> , McCulloch	=	„ <i>forsteri</i> .
		<i>Neoblennius fasciatus</i> .

The status of some of the last-named species is open to question.

Family MILYERINGIDAE, *nov.*

A new family of the Order Gobioidae to accommodate a new genus of blind cryptozoic gudgeons from fresh water in Western Australia. Separable from the Eleotridae by having no eyes, the ventral and first dorsal fins reduced in size. The naked head is criss-crossed by rows of sensory papillae; similar rows transverse the body anteriorly. Body covered with large, thin, adherent, cycloid scales, difficult to see and count; the breast is apparently naked anteriorly. Dorsal and anal fins free from caudal. Pectoral base not remarkably muscular.

Other characters as described below.

Perhaps evolved from some gudgeon similar to *Carassiops*, which is not known from Western Australia. However, the interesting implications of this new form must await fuller elaboration later when I can refer to more literature than is available to me here in Western Australia.

MILYERINGA, gen. nov.

Orthotype, *Milyeringa veritas*, sp. nov.

Head large, broad, and depressed; naked. Eyes obsolete. Body scaly. Rows of sensory papillae on head and trunk. Skin not notably loose or flabby. Mouth large, horseshoe-shaped. Bands of cardiform teeth in jaws, enlarged at sides of lower jaw. No barbels. No preopercular spine.

Typhleotris Petit, 1933, has six dorsal spines and eighteen anal rays, more numerous scales, and different head-characters.

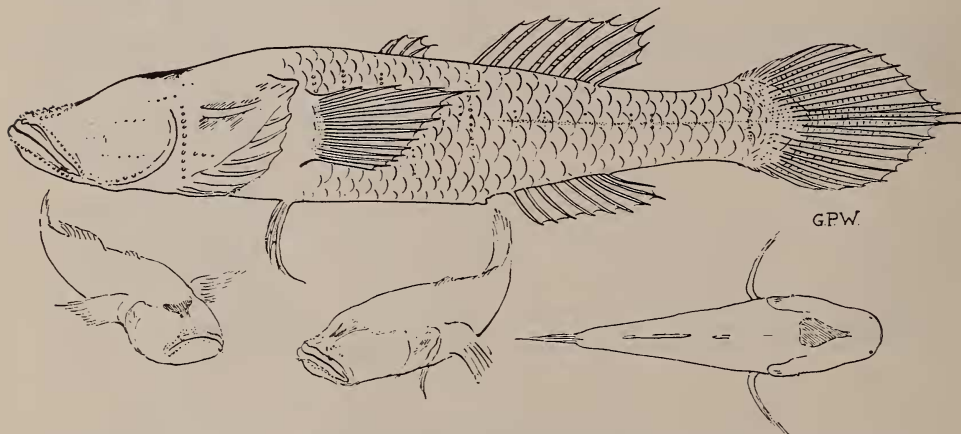
MILYERINGA VERITAS, sp. nov.

(Fig. 15.)

General characters as defined for family and genus, and facies as figured.

D. iv./9; A. 9; P. 13; V. 4; C. 17 et lat. brev. Sc. c. 26. Tr. 10. About 14 predorsal scales.

Head (17 mm.) 2.3, depth (8) 5 in standard length (40.5); depth of caudal peduncle (4) 4.2 in head. Upper profile of head concave over snout, bulging over preoperculum and rising to a humped shoulder. A flat



15. Blind Gudgeon, *Milyeringa veritas*, Whitley. Holotype from Milyering, North-west Cape, and attitudes of same when alive.

opercular spine. Lower jaw the longer, chin protruding. Tongue rounded, not notched. Anterior nostril tubular, over upper lip; posterior oval, larger. Sensory pores (tactile organs) around mouth, on top of snout and in rows crossing cheek, descending behind preoperculum, and on sides of trunk, but they are difficult to distinguish. Gill-openings wide, separated by the isthmus to which they are joined. Branchiostegal rays and membranes much exposed; there appear to be seven rays, but the lower ones are shrouded in folds of skin.

Body as wide as deep behind pectorals, but more compressed posteriorly. Vent and anal papilla conspicuous. A sulcus along middle of sides posteriorly. Rows of tactile sensory organs not bilaterally symmetrical.

Two dorsal fins, the first very reduced, with weak spines, the first two approximated. Anal small. Pectorals without free silk-like rays, though one or two upper rays are produced. Ventrals slender, separate. Caudal broadly rounded, with middle rays produced. Fin-rays simple, some articulated.

Colours in life.—Generally pale grey. A purplish stain on operculum over the gills. Top of head pale yellow with some purplish-pink on vertex. Posterior nostrils pink, looking like tiny red eyes in the albino head. A dark grey triangular mark, apex pointing forward, over brain. Fins flesh-coloured.

Described and figured from the holotype, 40.5 mm. in standard length or 50 mm. (2 inches) over all.

Locality.—Milyearing, Yardie, 20 miles south-west of Vlamingh Head, North-west Cape, Western Australia, on Mr. Eric Payne's station, October 18, 1944. About a dozen specimens in freshwater well, bored through coral and limestone under a windmill. They sank to bottom when disturbed, but Mr. Payne caught the one described above. He says that there are sometimes three times as many in this well, but fish are not known to occur in any of the many other wells scattered over the peninsula. Fishes have been there at least sixteen years, to Mr. Payne's knowledge, but the well was sunk in the early 1920's, so they may have been there earlier; perhaps a subterranean river seeps through the limestone into the well. The fish are never pumped by the windmill into the adjacent tank. Their movements are slow and rather tadpole-like, the pectorals being stretched out sideways or pointing a little forwards and the ventrals held slightly forward like fingers. Perhaps they feed on the insects and other small animals which may drop into the water (ants, lizards and woodlice live under the boards covering the top of the well and keeping it dark).

Family GOBIIDAE.

DROMBUS HALEI LEPIDOTHORAX, subsp. nov.

Drombus halei Whitley, Rec. S. Austr. Mus., v., 1935, p. 353, figs. 4-5. Flinders Island, North Queensland. Holotype in S. Austr. Mus., Adelaide.

Seven specimens collected by Mr. John Gregory in October, 1938, from the beach near Denham, Western Australia, are referable to this species, which has not hitherto been recorded from Western Australia. They agree with the type-description but differ sufficiently to be named as subspecies, the discrepancies being:—

Type of *Drombus halei* in
S. Aust. Mus., Adelaide.

Eye one-third of head.
Scales 28.
Breast and lower pectoral base
naked.
Head plain and dark; body with-
out conspicuous white spots.

Total length, $1\frac{1}{2}$ inches.
Queensland.

Types of new subspecies in
W.A. Mus., Perth.
Nos. P.2667 to 2673.

Eye one-quarter of head.
Scales more than 30.
Breast and lower pectoral base
scaly.
Head conspicuously white-spotted;
other white spots on lower
half of body.

Total length about 2 inches.
Western Australia.

Family PLATYCEPHALIDAE.

PLANIPRORA MELSOMI, *sp. nov.*

A Western Australian Sand Flathead which I at first considered might be *P. mulleri* Klunzinger, 1879, but it differs in having more fin-rays and longer lower preopercular spine, etc.

D.ix./i., 13; A. 14. L. lat. 86 to hypural + 6 on tail.

Head (125 mm.) 3.2, depth (45) 9 in standard length (407). Eye (19.5) 6.4, interorbital (17) 7.3 in head. Snout to anterior margin of eye, 38 mm.

Head with smooth ridges above, but no spines, except a small one at each eye, supero-laterally. Lower preopercular spine slightly longer and thicker than upper. A broad flap of skin below preopercular spines on each side of head. Teeth villiform, none caniniform, but some slightly enlarged near symphysis and middle of upper jaw on jaws and palate. Tongue truncate. Gill-rakers 10 + 3 rudiments on lower half of anterior branchial arch. A spine at origin of lateral line. Eleven scales between origin of spinous dorsal and lateral line. Body and fins as in the family.

General colour in life, sandy-grey above, uniform white below. Upper surface of head with rusty brown spots, largest along sides; similar scattered small rusty brown spots and also some white spots on upper parts of body. Eye dark blue. Bronze to yellow iris with golden ring; upper parts of eye similar in colour to dorsal surface. Fin membranes hyaline. Spines and rays with alternating cream and brownish-grey markings, the latter tending to form round spots. Anal cream, or tinged pinkish. Caudal similar to paired fins, but with three or four round black spots along lower half of posterior margin, each spot surrounded by cream; a giraffe-like pattern of paler spots on rest of tail. Vent red.

Described from the holotype of the species, a developing female (stage 1), 470 mm. or 18½ inches in total length; head preserved in The Australian Museum, Sydney.

Locality.—Beach at Geraldton, Western Australia; 28th October, 1943. Ranges from Geraldton to Esperance.

Named in honour of Mr. Alf. K. Melsom, of the State Fisheries Department, Perth, in appreciation of his enthusiastic co-operation in fisheries work.

Family ALEUTERIDAE.

PERVAGOR MELANOCEPHALUS (Bleeker).

Monacanthus melanocephalus Bleeker, Nat. Tijdschr. Ned. Ind., v., 1853, p. 95. Solor, East Indies. *Id.*, Jordan & Seale, Bull. U.S. Bur. Fish., xxv., 1905 (1906), p. 365, fig. 69.

Pervagor melanocephalus Fraser-Brunner, Ann. Mag. Nat. Hist. (II), viii., 1941, p. 183.

First dorsal spine originating over anterior portion of eye; its anterior surface very rugose with upwardly directed spines superiorly and with a row of large lateral spines along its sides. A depression in the back to receive dorsal spine. A large, prickly, movable pelvic spine. Scales with a large central backwardly directed spine, sometimes two spines or smaller spine at side. Lateral line discernible. Origin of anal behind level of that of soft dorsal.

Colour in spirit: dark brown, gill-opening in a blackish bar, pelvic flap blackish; a chequered band at end of caudal fin.

One specimen, 96 mm. long, from the Abrolhos Islands; second Percy Sladen Trust Expedition, obtained by Professor W. J. Dakin, in 1915, constitutes a new record for Western Australia. The species has been recorded from New South Wales, Queensland, New Guinea, Samoa, and the East Indies.

Family OSTRACIIDAE.

Genus RHYNCHOSTRACION Fraser-Brunner, 1935.

RHYNCHOSTRACION NASUS (Bloch).

(Plate i.)

Ostracion nasus Bloch, Nat. ausl. Fische, i., 1785, p. 118, pl. cxxxviii. "Nile." D. 9; A. 9; P. 10; C. 8 branched rays.

Eye (17 mm.) 1.6 in snout (28.5) or 1.8 in interorbital (32). Opening of carapace around mouth (19) 2.2, gill-slit (12) 3.5, pectoral (27) 1.5 in head (43), which is 3.1 in length of carapace measured from tip of snout to middle of lateral concavity before tail (137). Depth (60) 3.6 in total length (217), more than width of back (45). Anal or dorsal base (10) 4.3, length of caudal peduncle (39) 1.1, height of dorsal (29) 1.4 in head.

Tips of snout a small conic protruberance. Upper profile sloping up to the concave interorbital and overhanging supraorbitals. No spines over eyes or on body ridges. Gill-opening behind level of eye. Carapace five-angled. A median ridge along back, from behind head to before dorsal fin, is tubercular posteriorly. Dorso-lateral ridges extend from eye, swell and become tubercular over sides, converge on each side of dorsal fin and form an arrowhead-shaped closure behind that fin, the posterior point being tubercular.

The ventro-lateral ridges extend from the mouth backwards like the dorso-lateral ones and the carapace is similarly closed behind anal fin. Opening of carapace surrounding mouth pyriform, extending forward below snout. Brown, peg-like teeth in jaws. Nostrils in oblique groove before eye. About ten scutes between gill-opening and tail, about five between eye and snout, six along dorsal ridge, six down sides of body between ridges and about sixteen along belly. Scutes mostly granular. Caudal peduncle compressed, longer than snout, subequal to length of caudal fin.

Dorsal higher than anal, both their angles rounded. Anterior pectoral rays much longer than posterior. Caudal subtruncate; a simple ray above and below the branched ones.

Colour of dry specimens yellowish-brown, the fins lighter. Most of the fish (except upper part of flanks, dorsal, pectoral, and anal fins, and belly) with large dark brown spots, some about half eye-diameter.

Described and figured from a dried specimen in the Western Australian Museum, Perth (Regd. No. P.1852), 217 mm. or $8\frac{1}{2}$ inches long. As it has been gutted, the number of belly-scutes was computed from two smaller specimens, of which one has a carapace of 46 mm. or is 70 mm. in total length, and the larger is incomplete, with a carapace of 172 mm.; the latter specimen would probably have measured at least 10 inches overall, but the tail is broken off.

Localities.—Shark's Bay, Wallal, and Broome, Western Australia. Other specimens from Cape Cleveland, Queensland, in the Queensland Museum, Brisbane, and the Australian Museum, Sydney.

New record for Australia.

NEW RECORDS OF WESTRALIAN FISHES.

In addition to the new species and records mentioned above and in my 1944 papers, the species listed below may now be added to the Western Australian fauna which, at the time of writing (December, 1944), including novelties, has 680 different species of fishes, excluding introduced ones. Doubtless many more new records and even new species will be discovered in the near future.

Most of these new records are based on specimens discovered by Mr. L. Glauert, Curator of the Western Australian Museum, and exhibited by him before the Royal Society of Western Australia. However, no notice of these novelties has hitherto been printed, and I am indebted to Mr. Glauert for so generously making his specimens and manuscripts available to me for the present purpose. Other fishes new to the fauna of Western Australia have been collected in the field or from the markets by myself during investigations for the C.S.I.R. Division of Fisheries, or identified for the first time from the collections of the Western Australian Museum. The registered numbers of W.A. Museum specimens are preceded by the letter "P" in this list; those of the Australian Museum, Sydney, by the letters "IB." To save space the names of classificatory groups (orders, families, subfamilies, etc.) have been omitted. These may be found in Whitley's "Fishes of Australia," Volume I., or in McCulloch's Check-list of the Fishes recorded from Australian waters (Austr. Mus. Mem., v., 1929-1930), the scheme of classification in those works being followed here. References to genera are mostly available from Neaves' "Nomenclator Zoologicus" and to species from McCulloch's work cited above, or from recent volumes of the "Zoological Record."

- Orectolobus ornatus halei*, Whitley. Augusta and Pelsart Id. (self).
Eucrossorhinus ogilbyi (Regan). Balla Balla (W.A. Mus. No. P.1234).
Carcharhinus mackiei (Phillipps). South and South-west Australia.
Isuropis mako (Whitley). South-west Australia to Carnarvon.
Carcharodon albigors, Whitley. Fremantle to Carnarvon.
Carcharias arenarius, Ogilby. Bunbury to Jurien Bay.
Rhynchobatus djeddensis australiae, Whitley. Fremantle (P.1520 and 1719) and Shark's Bay (self).
Pristis zijsron, Bleeker. Carnarvon and Shark's Bay.
Pristis clavata, Garman. Billabong, near Derby (P.1300).
Urogymnus asperimus (Bloch & Schneider). Broome (11,276, W.A. Mus.).
Bathytoshia brevicaudata (Hutton). Augusta, Fremantle, Geraldton.
Bathytoshia thetidis (Waite). Esperance and Bunbury.
Rhenoptera, sp. Carnarvon.
Chirocentrus vorax (Castelnau). Broome (P.558).
Nematalosa, sp. Noonkanbah.
Pisodonophis cancrivorus (Richardson). Broome (P.549).
Muraenichthys breviceps, Gunther. Albany.

- Verdithorax prasinus* (Richardson). South-west Australia (W.A. Mus. 11,317).
- Strongylura strongylura* (van Hasselt). North-west Australia.
- Athlennes caeruleofasciatus* (Stead). Carnac Island.
- Scomberesox forsteri*, Cuv. & Val. Rottnest Island and Albany (P.757, 1905).
- Arrhamphus sclerolepis*, Gunther. North-west Australia.
- Farhians commersonii* (Cuvier). Whitford's Beach (P.257 2-3).
- Lotella callarias*, Gunther. Busselton.
- Paratrachichthys traillii*, Hutton. South-west Australia.
- Holocenthrus diadema* (Lacepede). Mandurah.
- Lampris regius* (Bonnaterre). Western Australia.
- Iso rhothophilus* (Ogilby). Albany.
- Oedalechilus kesteveni*, Whitley. Shark's Bay (P.325).
- Polynemus plebeius*, Broussonet. Shark's Bay and Exmouth Gulf (P.2780).
- Plectropomus maculatus* (Bloch). King Sound (P.629) and Shark's Bay (self).
- Epinephelus merra*, Bloch. Carnarvon and Cape Cuvier.
- Epinephelus (Homalagrystes) tauvina* (Bonnaterre). Peron Peninsula and Point Cloates (self).
- Promicrops lanceolatus* (Bloch). North-west Australia to Rottnest Island (P.2743).
- Variola louti* (Bonnaterre). "Perth Fish Markets, October, 1940" (P.2325).
- Callanthias allporti*, Gunther. Off southern coastline.
- Pristiapogon victoriae* (Gunther). Shark's Bay and Cape Cuvier.
- Scomberoides lysan* (Bonnaterre). Shark's Bay, Exmouth Gulf, Onslow.
- Caranx ignobilis* (Bonnaterre). Port Hedland and Shark's Bay.
- Caranx ferdau paraspistes*, Richardson. Off Fremantle.
- Selar malam* (Bleeker). Exmouth Gulf (P.2499).
- Trachinotus ovatus* (Linne). Peron Peninsula and Exmouth Gulf.
- Diacope sebae* (Cuvier). North-west Australia.
- Parequula melbournensis* (Castelnau). South and south-west coasts up to Bunbury.
- Lethrinus perselectus*, Whitley. Abrolhos.
- Argyrops spinifer* (Bonnaterre). Shark's Bay (P.659).
- Monodactylus argenteus* (Linne). Bay of Rest and Port Hedland.
- Desmoprenes tetracanthus* (Lacepede). North-west Australia.
- Paristiopterus labiosus* (Gunther). Southern coasts.
- Goniistius vizonarius* (Saville-Kent). Albany (W.A. Mus. 12905).
- Neothunnus macropterus* (Temminck & Schlegel). Geraldton (D. L. Serventy, MS.).
- Germo germon steadi*, Whitley. Quindalup.
- Sarda orientalis serventyi*, subsp. nov. Albany (P.3512, holotype) and Busselton (P.2568, paratype). Differs from *Pelamys orientalis* Temminck & Schlegel, Faun. Japon., pl. lii., in having about seven stripes instead of nine, lower spinous dorsal, maxillary reaching further back, larger size, narrower preopercular arc, and the finlets are not grey.
- Xiphias gladius*, Linne. Geraldton (P.1298).
- Lepturacanthus savala* (Cuvier). Derby.

- Amphacanthus nebulosus* (Quoy & Gaimard). Woodman's Point (P.1383), Geraldton, and Onslow.
- Naso*, sp. Point Cloates.
- Pseudorhombus jenynsii* var. *anomalus*, Ogilby. Shark's Bay (P.2169).
- Ammotretis elongatus*, McCulloch. Garden Island (P.124).
- Synaptura nigra* (Macleay). Onslow (P.2828).
- Chromis scotochilopterus*, Fowler. Southern Abrolhos and Dirk Hartog Island (P.2789, 2816, 2817).
- Cheilinus* (*Thalliurus*) *chlorurus* (Bloch). Blowholes, north of Carnarvon (P.2797).
- Verreo oxycephalus* (Bleeker). Abrolhos (P.389).
- Parapercis haackei* (Steindachner). Albany, Dongarra.
- Crapatalus arenarius*, McCulloch. North Beach and Garden Island (P.236).
- Ichthyscopus sannio*, Whitley. South-west Australia.
- Foetorepus papilio* (Gunther). Cottesloe (P.888 and 1050).
- Repomucenus*, sp. nov. Shark's Bay (Austr. Mus. Nos. IB.326, 358).
- Salarias spaldingi*, Macleay. Port Hedland (P.198, 578).
- Istiblennius lineatus* (Cuv. & Val.). Point Cloates (self, P.2810-12).
- Pictiblennius tasmanianus* (Richardson). Fremantle to Shark's Bay.
- Pauloscirtes obliquus* (Garman). Denham (P.2657-66).
- Cristiceps aurantiacus*, Castelnau. Fremantle (P.801) and Point Peron (P.1309, 1706).
- Genypterus blacodes* (Bloch & Schneider). Busselton (P.1974).
- Butis amboinensis* (Bleeker). Port Hedland (5803, W.A. Mus.).
- Glossogobius giuris* (Ham. Buch.). Noonkanbah.
- Paratrigla papilio* (Cuv. & Val.). Off Bald Island (P.730).
- Dactyloptena orientalis* (Cuv. & Val.). Geraldton (P.1417).
- Gnathanacanthus goetzeei*, Bleeker. Torbay (P.2355).
- Neopataecus waterhousii* (Castelnau). North Beach and Fremantle (P.805 and P.1302).
- Thysanophrys cirronasus* (Richardson). City Beach.
- Suggrundus parilis* (McCulloch). Shark's Bay and Onslow.
- Rhycherus filamentosus* (Castelnau). Cottesloe (P.810 and 2315).
- Pervagor melanocephalus* (Bleeker). Abrolhos (P.388).
- Eubalichthys mosaicus* (Ramsay & Ogilby). Albany and Rottnest Island (P.689).
- Acanthaluteres guntheri* (Macleay). Albany (P.2455).
- Aracana ornata* (Gray). Esperance.
- Spheroides pleurogramma* (Regan). Esperance to Denham.
- Ovoides immaculatus* (Bloch & Schneider). Onslow and King Sound (P.617).
- Mola ramsayi* (Giglioli). Fremantle, Rottnest Island and Rockingham.
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